Exhibit A

TO FIRST AMENDED COMPLAINT FOR DECLARATORY JUDGMENT OF NONINFRINGEMENT

From: Timothy Maloney <Tpmalo@fitcheven.com>
Sent: Tuesday, February 16, 2021 9:33 AM
To: Taylor, Jeremy <jeremy.taylor@bakerbotts.com>
Subject: Rule 408 Settlement Communication

[EXTERNAL EMAIL]

Jeremy –

I have attached representative claim charts for some additional patents mentioned in the settlement presentation that we discussed in mid-November. We believe this demonstrates additional value to Lyft of taking a license under the Quartz Auto portfolio.

I would appreciate if you would acknowledge that this email and the attachment made it through to you.

Quartz remains willing to work towards a business resolution of the litigation and other potential claims under the Quartz portfolio. We have let you know our views regarding a fair settlement range and the scope of license that is available. As mentioned recently, we consider the ball to be in Lyft's court to provide an indication that it is ready to engage in serious discussions in line with the guidance we provided.

Also, I acknowledge your recent inquiry regarding the Uber settlement. As things presently stand, Quartz is not interested in exploring the possibility of engaging in early discovery relating to Uber agreement.

As always, feel free to call anytime if you have additional thoughts or information that will progress settlement discussions forward.

Tim

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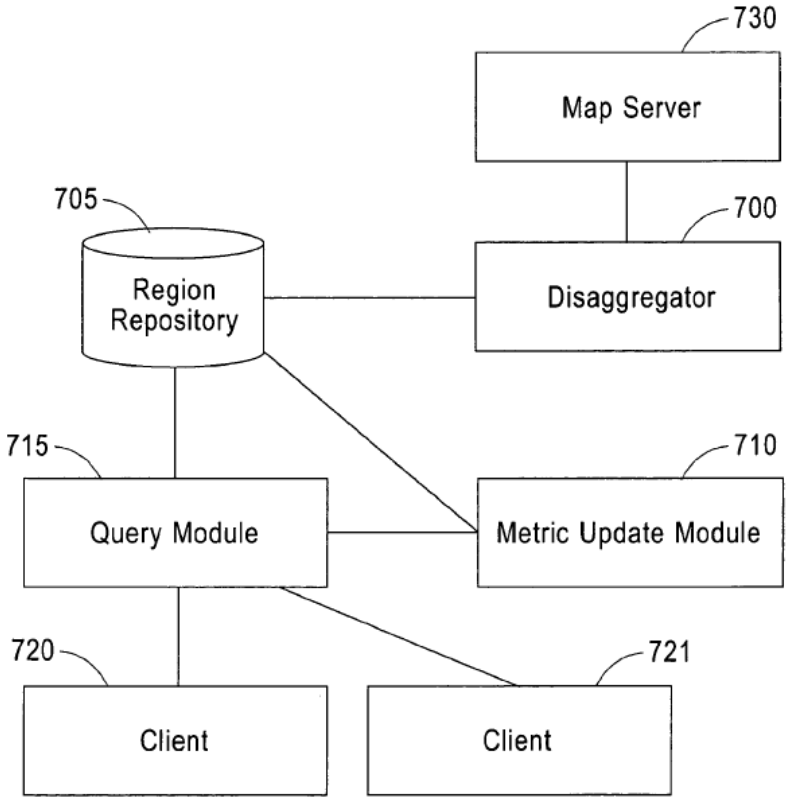
Quartz Auto Technologies LLC v. Lyft, Inc.
Additional Exemplary Claim Charts

Overview of Patent

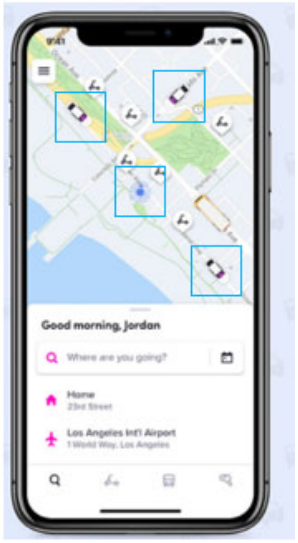
U.S. Patent No. 7,007,013	
Title	Fast computation of spatial queries in location-based services
Issue Date	Feb. 28, 2006
Priority Date	July 26, 2002
Expiration Date	January 30, 2024
Abstract	This invention provides methods, systems, and apparatus for performing fast computation of metric queries. To achieve this, in an example embodiment, the present invention segments metric regions into disjoint primitive atomic shapes. It then represents these primitive atomic shapes and then performs offline computation of their relevant properties. As a result of the off-line computation, the execution of a query requires a minimal number of online calculations resulting in a very fast query. Further optimization occurs via storage of query histories and prioritization of queries with respect to the access frequency of a metric space's primitive atomic shapes.



U.S. Patent No. 7,007,013

Claim 1	Lyft Backend Query Processing
1. A method comprising: preparing, in anticipation of a query related to a metric space, a representation of a region to be used in forming a response to said query, said method further including the steps of: obtaining a mathematical format of said region within said metric space; disaggregating said region into a set of atomic shapes; and forming the representation of said region by preprocessing and storing at least one property for at least one of said atomic shapes.	U.S. Patent No. 7,007,013 (the "'013 patent") relates to reducing the time it takes for a computer to output a response to a query about people and services that considers the location of and distance between those people and services. The '013 patent achieves its goal by creating a representation of the world that allows for more rapid and efficient processing of such queries. Many of the services associated with Lyft's platform utilize mathematical representations of geographic regions to provide answers to queries regarding the location and distance between people and services. Discovery will reveal the precise architecture of Lyft's platform and the algorithms implemented within its architecture. For simplicity, the processing of queries by Lyft's servers is referred to below as "Backend Query Processing" with the understanding that this encompasses any system architecture used by Lyft to respond to various queries regarding the location and distance between people and services. On information and belief, Lyft has built proprietary algorithms for answering queries on a metric space. That proprietary system is based on a public domain geocode system called Geohash.[1]

U.S. Patent No. 7,007,013

Claim 1	Lyft Backend Query Processing
1. A method comprising: preparing, in anticipation of a query related to a metric space, a representation of a region to be used in forming a response to said query, said method further including the steps of: obtaining a mathematical format of said region within said metric space; disaggregating said region into a set of atomic shapes; and forming the representation of said region by preprocessing and storing at least one property for at least one of said atomic shapes.	Below is a screen capture of Lyft's ride sharing application illustrating a rider, as a blue dot, and drivers, as vehicles, around the rider. Lyft's servers process queries, such as spatial queries, related to regions of interest. One representative example of Lyft's usage of the method of this claim relates to matching riders with drivers. The Lyft system uses a metric to determine distances between those riders and drivers. Together the set of riders and drivers and the metric used to determine the distance between those riders and drivers define a metric space.[1] 

U.S. Patent No. 7,007,013

Claim 1

1. A method comprising:

preparing, in anticipation of a query related to a metric space, a representation of a region to be used in forming a response to said query, said method further including the steps of:

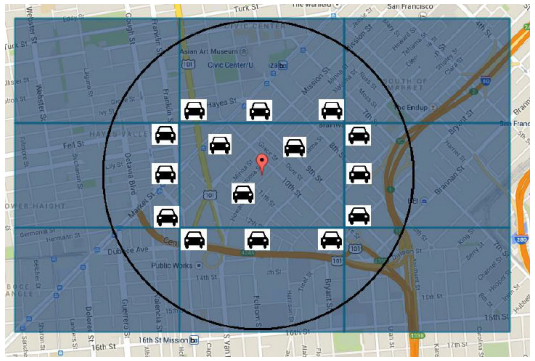
obtaining a mathematical format of said region within said metric space;

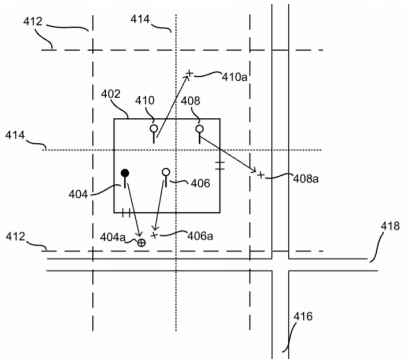
disaggregating said region into a set of atomic shapes; and

forming the representation of said region by preprocessing and storing at least one property for at least one of said atomic shapes.

Lyft Backend Query Processing

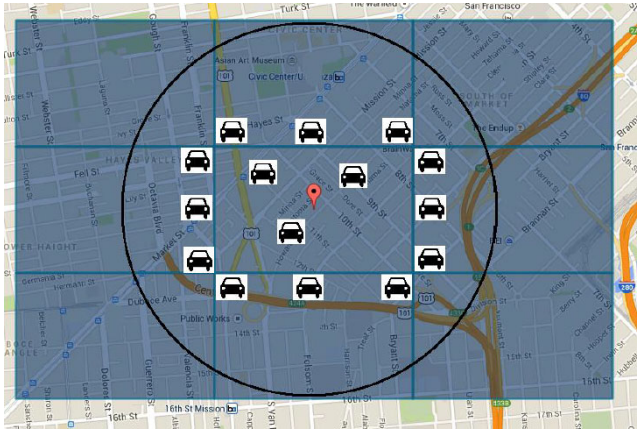
The Backend Query Processing prepares, in anticipation of a query related to a metric space, a representation of a region to be used in forming a response to said query. In the image on the left below, each of the blue rectangles is a geohash. The circle formed at a radius around the center point is a region to be used in forming a response to a query.[4] The collection of nine geohashes that overlap the circular region is the representation of the region. The example below is conceptual, and the geohashes very roughly approximately the circle. However, on information and belief, Lyft uses various sizes of geohashes for responding to various queries about regions. For example, Lyft's U.S. Patent No. 9,769,619 describes that "geohash data **412**, **414** may be used to determine a particular geohash associated with the current request **404**. For example, a geohash at a certain level may first be determined **412**, then geohashes at a more granular level may be determined **414**."[8] As shown in Fig. 4A below, geohash level 412 defines a rectangular areas (depicted by dotted lines) and geohash 414 subdivides each such rectangle into four smaller rectangles (depicted by solid lines). The more granular the geohash the more closely the region will be approximated.





As a Lyft engineer explained, "let's say our geo-hash is one square mile, and we want two miles of data. We're going to figure out the geo-hashes that cover our radius and then make queries for those." [1] Thus, the representation of the region is formed in anticipation of a query on the circle defined by the radius.

U.S. Patent No. 7,007,013

Claim 1	Lyft Backend Query Processing
1. A method comprising: preparing, in anticipation of a query related to a metric space, a representation of a region to be used in forming a response to said query, said method further including the steps of: obtaining a mathematical format of said region within said metric space; disaggregating said region into a set of atomic shapes; and forming the representation of said region by preprocessing and storing at least one property for at least one of said atomic shapes.	The Backend Query Processing obtains a mathematical format of a region within said metric space. In the case of a circular region, the Backend Query Processing necessarily obtains the mathematical format of the circular region in the metric space for use in determining which geohashes fully or partially overlap the region.[1,4] 

U.S. Patent No. 7,007,013

Claim 1

1. A method comprising:

preparing, in anticipation of a query related to a metric space, a representation of a region to be used in forming a response to said query, said method further including the steps of:

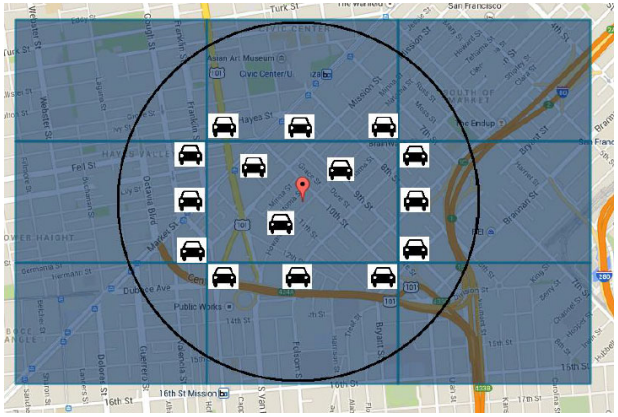
obtaining a mathematical format of said region within said metric space;

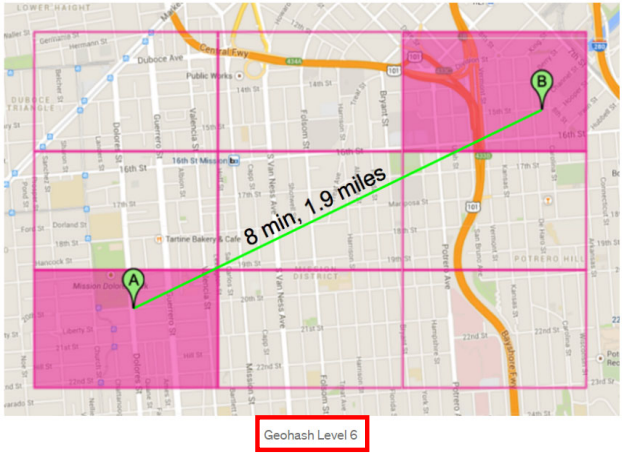
disaggregating said region into a set of atomic shapes; and

forming the representation of said region by preprocessing and storing at least one property for at least one of said atomic shapes.

Lyft Backend Query Processing

The Backend Query Processing disaggregates the region into a set of atomic shapes by identifying the geohashes that overlap the circle. “So geo-hashing is an algorithm that gives us arbitrary precision, and you'll see that it basically takes a map and just cuts it into a grid. Then you just can continue to add characters and do the same thing over and over until you have the desired precision.” [1] The geohashes can be of various size such that they approximate the region more or less closely.[1,4,6,8] Lyft’s system allows selecting levels in which the geohash areas “go all the way down to the width of a human hair.” [1] The image on the right below is illustrates geohash level 6, in which the rectangular areas are the size of several city blocks.

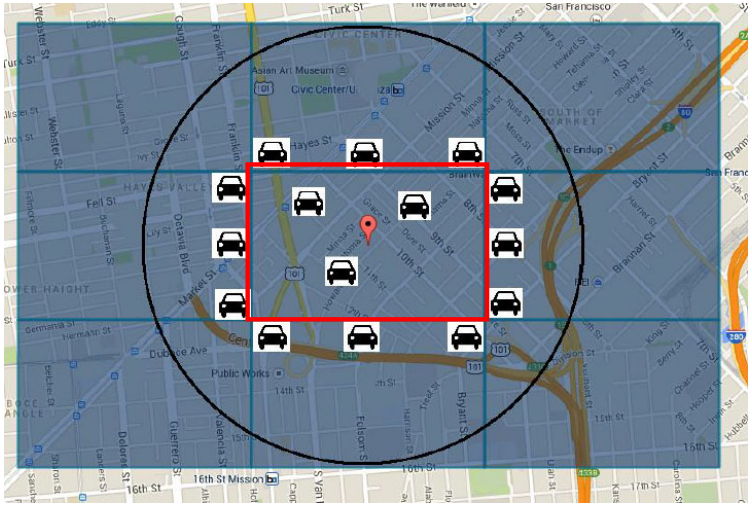




U.S. Patent No. 7,007,013

Claim 1	Lyft Backend Query Processing
1. A method comprising: preparing, in anticipation of a query related to a metric space, a representation of a region to be used in forming a response to said query, said method further including the steps of: obtaining a mathematical format of said region within said metric space; disaggregating said region into a set of atomic shapes; and forming the representation of said region by preprocessing and storing at least one property for at least one of said atomic shapes.	The Backend Query Processing that forms the representation of said region includes preprocessing and storing at least one property for at least one of said atomic shapes. An example of a property for the geohashes is data identifying which drivers are within a geohash during a set time interval. Another property is the timestamp that reflects how current the driver data is for the geohash. These and other properties associated with the geohashes to enable queries to be processed and answered more rapidly and efficiently. In the case of a rider that has requested to be picked up for a ride, the Lyft system determines the geohashes that cover a radius surrounding the driver.[1,4,6,8] These geohashes contain numerous properties, including an indication of the drivers associated with the geohash and a timestamp reflecting when the driver data was obtained. The system can sort geohashes by timestamp to make query processing more efficient. For example, "to find all the nearby drivers, what [Lyft is] going to do is have a sorted set per geo-hash, and . . . store the last timestamp."[1] To answer a query where a rider is looking for a nearby driver more efficiently, the system can quickly identify which drivers to choose by looking up the drivers present within the geohashes that represent the region of interest. On information and belief, Lyft also uses the claimed method to process other types of queries and regions, such as queries to determine which vehicles (i.e., drivers, scooters, bikes) are currently within a particular service region or geofenced region. Discovery will reveal the full scope of Lyft's implementation of the claimed methodology.

U.S. Patent No. 7,007,013

Claim 5	Lyft Backend Query Processing
2. A method as recited in claim 1, further comprising prioritizing said atomic shapes according to at least one prioritization criterion.	On information and belief, the Backend Query Processing prioritizes said atomic shapes according to at least one prioritization criterion.[1-4, 8] An example criterion is time. As discussed in claim 1 above, the Lyft system may sort the drivers in a given geohash based on a time associated with the driver data so that the function of matching a driver to a rider is made more efficient. "[T]o find all the nearby drivers, what we're going to do is have a sorted set per geo-hash, and in it we're going to store the last timestamp. So we're going to set the current seconds and then we're going to do basically expiration by calling Z-RAM range by score on that same sorted set." [1] On information and belief, the Lyft system also prioritizes the order in which it operates on multiple geohashes when responding to queries.[1,8] For example, if the purpose of the query is to match a rider to a driver, then the system likely searches the geohash that contains the rider for a driver before looking to other geohashes to find a driver. 

U.S. Patent No. 7,007,013

Claim 5	Lyft Backend Query Processing
5. A method as recited in claim 1, wherein said query is a spatial query.	On information and belief, the Backend Query Processing queries are spatial queries.[1-4] A spatial query is a metric query in which the units of distance measurements include feet, miles, meters or kilometers, or such, and in which regions are geographical regions. In other words, spatial queries are queries that deal with distance in a geographic region. Thus, an example of a spatial query used in Lyft's system is when a distance metric is used determine matches between a driver and a rider in a geographic region.

U.S. Patent No. 7,007,013

Claim 16	Lyft Backend Query Processing
16. A method as recited in claim 1, further comprising forming a response to said query employing said representation.	On information and belief, the Backend Query Processing forms a response to said query employing said representation. [1-4]

’013 Reference Materials

[1] RedisConf17 - Geospatial Indexing: The 10 Million QPS Redis Architecture Powering Lyft - Daniel H. https://www.youtube.com/watch?v=cSFWlF96Sds

[2] https://en.wikipedia.org/wiki/Geohash#cite_note-18

[3] Lyft Blog, “One App to Unlock Your City,” September 24, 2019. https://www.lyft.com/blog/posts/lyft-multimodal-app

[4] Lyft, “New Challenges in Data Science: Geospatial Analysis,” October 16, 2014.

[5] Lyft Engineering, “Matchmaking in Lyft Line– Part 1,” Feb. 2, 2016. https://eng.lyft.com/matchmaking-in-lyft-line-9c2635fe62c4

[6] Lyft Engineering, “Matchmaking in Lyft Line– Part 2,” Feb. 2, 2016. https://eng.lyft.com/matchmaking-in-lyft-line-691a1a32a008

[7] Lyft Engineering, “Matchmaking in Lyft Line– Part 3,” Apr. 20, 2016. https://eng.lyft.com/matchmaking-in-lyft-line-part-3-d8f9497c0e51

[8] U.S. Patent No. 9,769,616.

Overview of Patent

U.S. Patent No. 9,691,275	
Title	Adjusting Vehicle Timing in a Transportation Network
Issue Date	June 27, 2017
Priority Date	November 6, 2015
Expiration Date	January 30, 2024
Abstract	Methods, computer program products, and systems are presented. The methods include, for instance: obtaining passenger information of one or more passenger traveling within a transportation network; and providing one or more output based on a processing of the passenger information.

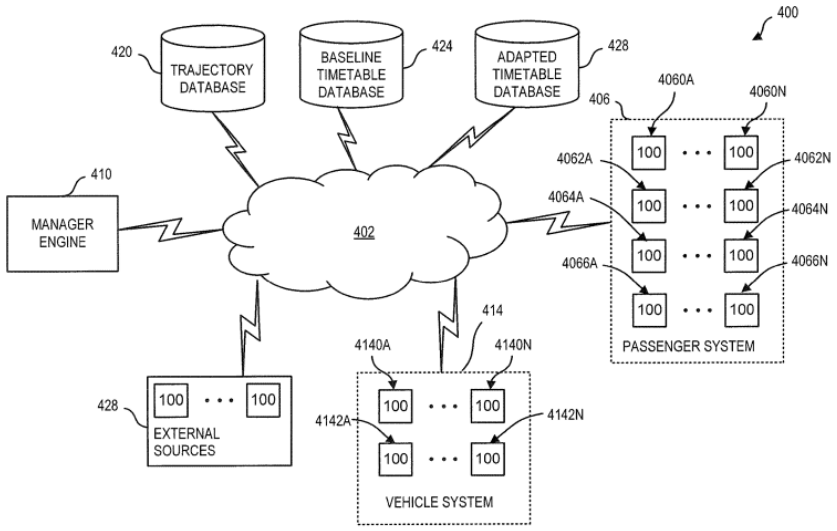


FIG. 4A

U.S. Patent No. 9,691,275

Claim 1

1. A method comprising:

obtaining, by one or more processor, passenger information of one or more passenger traveling within a transportation network, wherein the passenger information includes passenger location information; and

providing, by the one or more processor, an output based on a processing of the passenger information, wherein the processing includes processing to determine an adapted timetable for providing a reduced cumulative wait time.

Infringement by Lyft's Backend Timetable Processing for Lyft Line

Lyft Line is a product within Lyft's dynamic transportation suite that operates using an adjustable timetable for the purpose of providing a reduced cumulative wait time for passengers using the product. Discovery will reveal the precise architecture of Lyft's platform and the algorithms implemented within its architecture. For simplicity, the processing of an adapted timetable by Lyft's servers is called "Backend Timetable Processing" with the understanding that this encompasses any system architecture used by Lyft to create efficient routes according to an adapted timetable.

Lyft discussed its development of its Lyft Line product in a three-part blog series published by its engineering department.[1-3] The series emphasizes how the adaptable timetable of the Lyft Line product is crucial to its market success.

Efficiency and Efficiency improvements

At this point, we had spent a lot of time focusing on passenger experience, but not a lot of time on product efficiency improvements that would let us provide larger discounts. So far, we had only considered putting two passengers together in a route. This left a lot of efficiency on the table — more passengers in the car at the same time meant more cost savings we could give back to our users. The obvious next step for us was to introduce Triple Matching — the ability to add a third, and fourth, passenger to the car.

U.S. Patent No. 9,691,275

Claim 1

1. A method comprising:

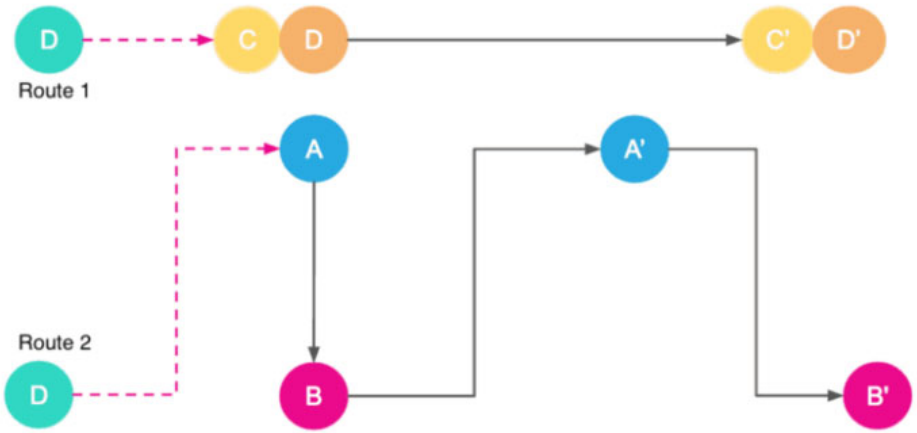
obtaining, by one or more processor, passenger information of one or more passenger traveling within a transportation network, wherein the passenger information includes passenger location information; and

providing, by the one or more processor, an output based on a processing of the passenger information, wherein the processing includes processing to determine an adapted timetable for providing a reduced cumulative wait time.

Infringement by Lyft's Backend Timetable Processing for Lyft Line

On information and belief, Lyft's Backend Timetable Processing uses one or more processors to obtain passenger information of one or more passenger traveling within a transportation network, wherein the passenger information includes passenger location information.[1-3]

Passengers provide, and Lyft's servers obtain, passenger information including their pick-up and drop-off locations. In the image below, the teal circles "D" represent the locations of drivers matched with passengers A (blue), B (pink), C (yellow), and D (orange). Passengers need to be dropped off at locations A', B', C', and D'. Lyft's servers receive the locations at which passengers A, B, C, and D are to be picked up and dropped off in order to match passengers with available drivers.[1-3]



Route Swapping passenger A into Route 1

U.S. Patent No. 9,691,275

Claim 1

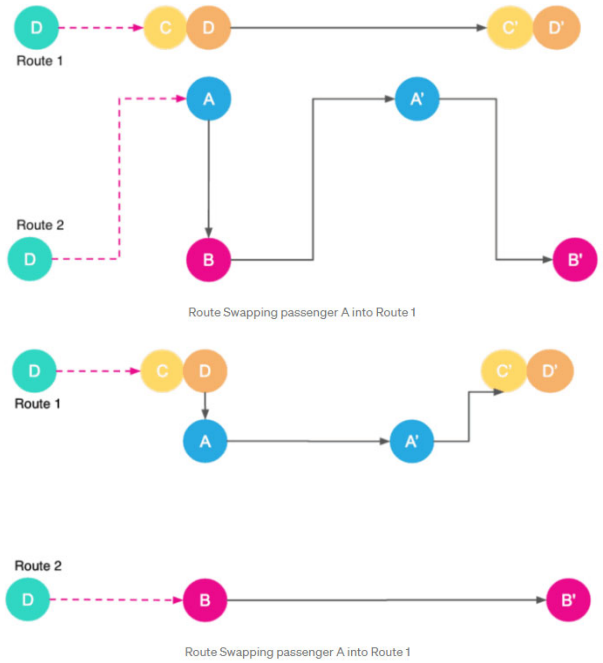
1. A method comprising:

obtaining, by one or more processor, passenger information of one or more passenger traveling within a transportation network, wherein the passenger information includes passenger location information; and

providing, by the one or more processor, an output based on a processing of the passenger information, wherein the processing includes processing to determine an adapted timetable for providing a reduced cumulative wait time.

Infringement by Lyft's Backend Timetable Processing for Lyft Line

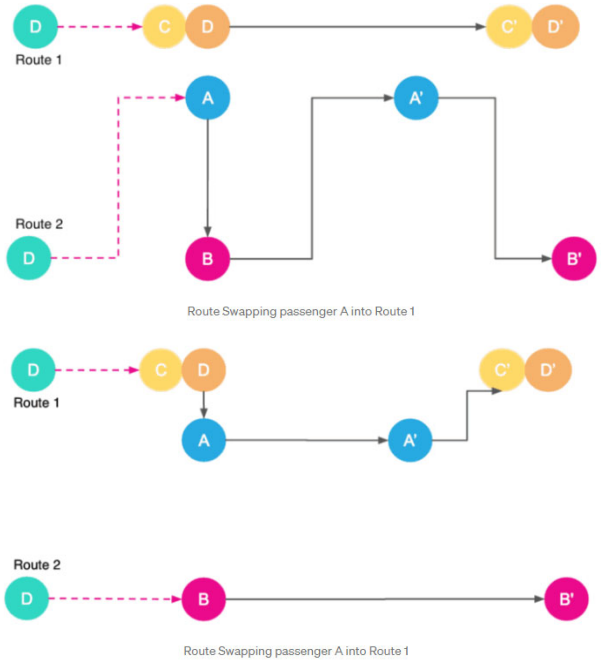
Lyft's Backend Timetable Processing processes passenger information in order to provide an output based on that information. The processing includes determining an adapted timetable for providing a reduced cumulative wait time.[1-3] By employing "route swapping" (alone or in combination with other matching techniques), cumulative wait time for passengers in Lyft's dynamic transportation network is reduced.



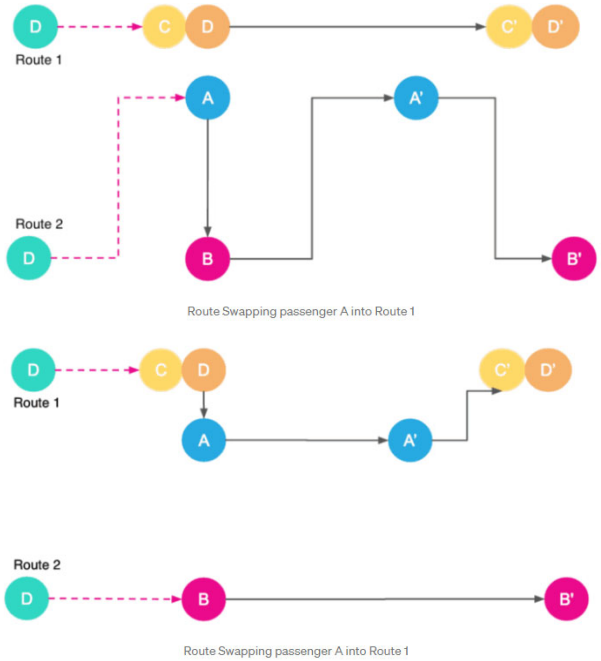
Route Swapping was a feature that would take a rider from one route, and swap them into another route. The passenger could be swapped before pickup and would be notified via SMS that we had a found a more efficient route for them. This gave us the ability to re-match passengers after they had already been matched if we found a more optimal pairing — essentially increasing our matching window from 60 seconds to a few minutes as we could keep looking for a better route even if we had already chosen a driver. An example of this is shown in the animation below, where passenger A is swapped from Route 2 to Route 1 after our system identified that the combined efficiency was more optimal with this pairing.

Route Swapping reduced the burden of having to predict future demand, but also came with its own challenges. For example, if during our initial match we told a passenger that they would be picked up in six minutes, they might take that time to make breakfast or brush their teeth. If we then swapped them to a new route with only a 30 second pickup time, they might be unavailable and miss their ride. Similarly, if we had found an initial match with a low pickup time (e.g. one minute), but then found a better match that had a four minute pickup time (and perhaps a much smaller detour), the passenger might now have to wait on the curb for three more minutes — not the best user experience. In all scenarios, we would only swap the passenger if the new route reduced their pickup or detour time, but we had to be cautious about making drastic changes[1]. Needless to say, Route Swapping came with its own constraints but led to significant efficiency gains, and more importantly, faster rides for our passengers.

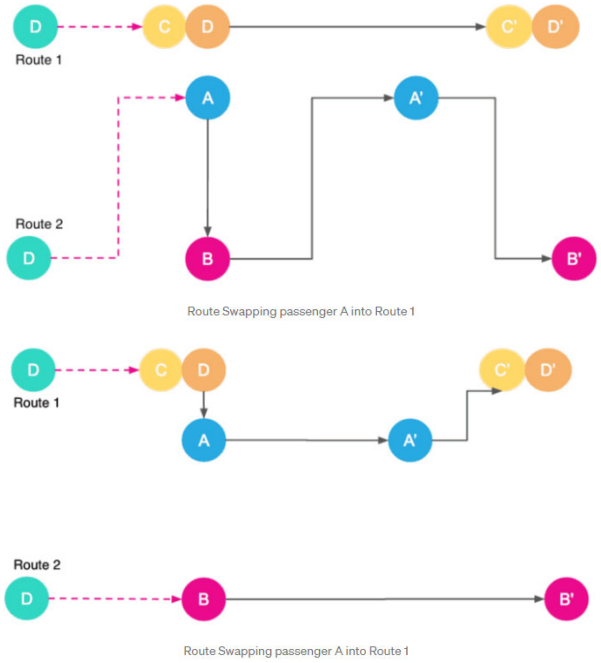
U.S. Patent No. 9,691,275

Claim 2	Infringement by Lyft's Backend Timetable Processing for Lyft Line
2. The method of claim 1, wherein the output is an output to adjust a timing of one or more vehicle of the transportation network.	Lyft's Backend Timetable Processing adjusts the timing of the drivers "D" when it swaps passenger A from route 2 to route 1.[1-3] 

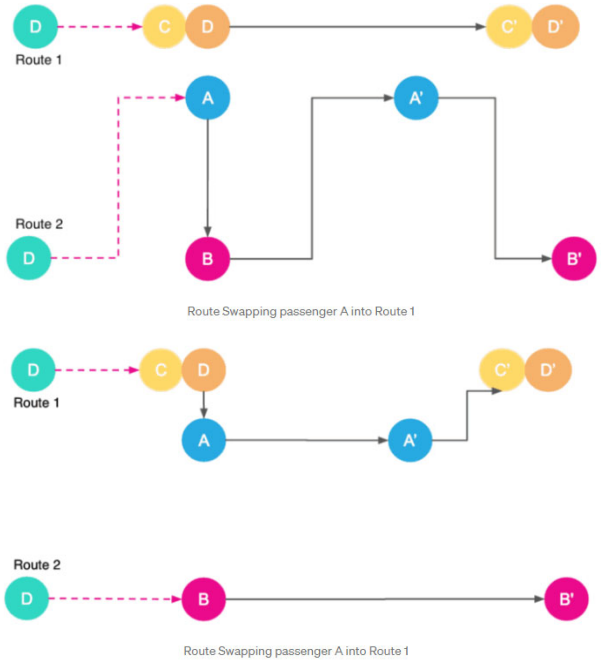
U.S. Patent No. 9,691,275

Claim 3	Infringement by Lyft's Backend Timetable Processing for Lyft Line
3. The method of claim 1, wherein the passenger information includes passenger trajectory information.	Passenger trajectory information includes the pick-up and drop off locations of the passengers.[1-3] 

U.S. Patent No. 9,691,275

Claim 4	Infringement by Lyft's Backend Timetable Processing for Lyft Line
4. The method of claim 1, wherein the passenger location information includes passenger location information of a plurality of passengers and wherein the passenger information includes passenger trajectory information.	Lyft's method uses passenger trajectory information (pick-up and drop off locations) of a plurality of passengers, e.g., A, B, C, and D.[1-3] 

U.S. Patent No. 9,691,275

Claim 5	Infringement by Lyft's Backend Timetable Processing for Lyft Line
5. The method of claim 1, wherein the output includes an adapted timetable, the adapted timetable having one or more adjustment from a baseline timetable.	When passenger A is swapped from route 1 to route 2, the timetables for both route 1 and route 2 are adjusted as compared to the original baseline timetable before the routes are swapped. [1-3] 

U.S. Patent No. 9,691,275

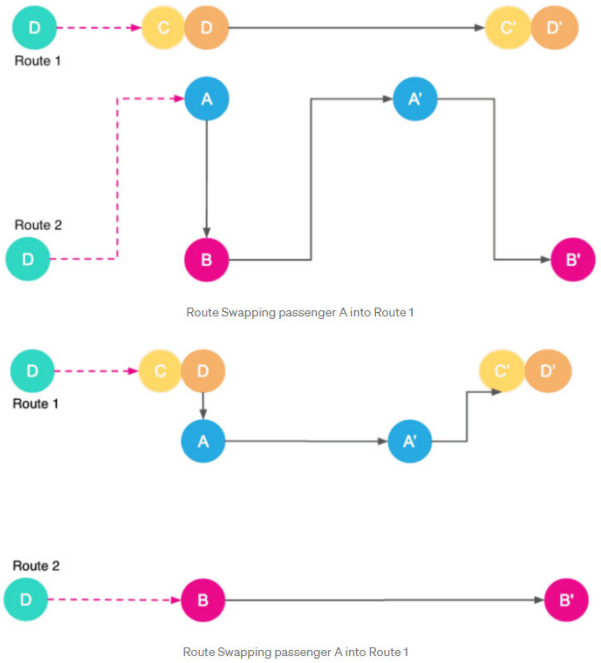
Claim 6	Infringement by Lyft's Backend Timetable Processing for Lyft Line
6. The method of claim 1, wherein the output includes a timetable and wherein the output is output to a computing node of one or more of a vehicle operator, transportation network operator or a passenger of the transportation network.	On information and belief, the output is output to the mobile devices, which comprise a computing node, of the vehicle operators (drivers D) and the passengers (A, B, C, or D). [1-3]

U.S. Patent No. 9,691,275

Claim 9	Infringement by Lyft's Backend Timetable Processing for Lyft Line
9. The method of claim 1, wherein the obtaining includes obtaining passenger location information from a passenger system, the passenger system having one or more of a passenger mobile device, a station fixed data collection terminal, or a vehicle weigh station.	Lyft's servers obtain its passengers' location information from the passengers' mobile devices (a passenger system).[1-3]

U.S. Patent No. 9,691,275

Claim 10	Infringement by Lyft's Backend Timetable Processing for Lyft Line
10. The method of claim 1, wherein the output is based on a processing of vehicle information.	In order to match drivers and passengers and perform Route Swapping, Lyft's servers must process vehicle information including the location of the drivers.[1-3]



[1] Notice that this Route Swap animation is actually an example of Rerouting plus Route Swapping — passenger A was the next pickup for the driver in Route 2 and by route swapping we changed the driver's next stop, making it a reroute. A swap like this would require significant cost savings to be worth all of the potential risks.

U.S. Patent No. 9,691,275

Claim 11	Infringement by Lyft's Backend Timetable Processing for Lyft Line
11. The method of claim 1, wherein the output includes information recommending a change to a passenger trajectory, and wherein the output is transmitted to a computing node of a passenger.	Lyft's Backend Timetable Processing includes information recommending a change to a passenger trajectory, and wherein the output is transmitted to a computing node of a passenger.[1-3] CHANGE TO: Lyft's Backend Timetable Processing includes a feature called "Hotspots," which suggests new pickup locations to passengers.[3] The recommended pickup location (a change in passenger trajectory) is provided to the passenger via the Rider app running on his/her mobile device (a computing node of a passenger).

’275 Reference Materials

[1] Lyft Engineering, “Matchmaking in Lyft Line– Part 1,” Feb. 2, 2016. https://eng.lyft.com/matchmaking-in-lyft-line-9c2635fe62c4

[2] Lyft Engineering, “Matchmaking in Lyft Line– Part 2,” Feb. 2, 2016. https://eng.lyft.com/matchmaking-in-lyft-line-691a1a32a008

[3] Lyft Engineering, “Matchmaking in Lyft Line– Part 3,” Apr. 20, 2016. https://eng.lyft.com/matchmaking-in-lyft-line-part-3-d8f9497c0e51

Overview of Patent

U.S. Patent No. 6,944,443	
Title	Method, apparatus and system for notifying a user of a portable wireless device
Issue Date	September 13, 2005
Priority Date	July 11, 2001
Expiration Date	March 13, 2023
Abstract	A method, apparatus and system for notifying a user of a portable communication device. In one embodiment, a location of a first portable communication device is determined for a first user and the location of a second portable communication device is determined for a second user. A determination is made as to whether the location of the second portable communication device is within a same region containing the first portable communication device. If the second portable communication device is within the same region as the first portable communication device, then the first user is notified of the presence of the second user

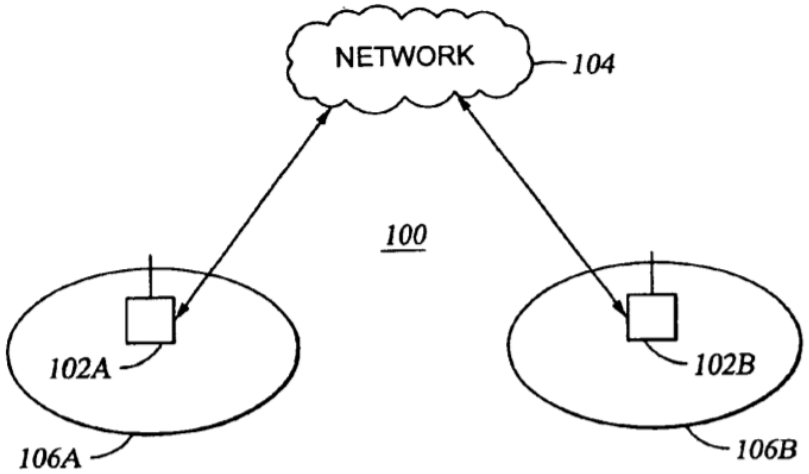


Fig. 1

U.S. Patent No. 6,944,443

Claim 1	Infringement by Lyft Rideshare
A method for notifying a user of a portable communication device, the method of comprising: determining a location of a first portable communication device of a first user; determining a location of a second portable communication device of a second user; determining whether the location of the second portable communication device is within a same region containing the first portable communication device; notifying the first user of a presence of the second user if the location of the second portable communication device is within the same region containing the first portable communication device; determining a common meeting point for the first and second users; notifying the first user of the common meeting point on the first portable communication device; and notifying the second user of the common meeting point on the second portable communication device.	Through the Lyft Platform, Lyft offers rideshare services to customers using Drivers it has enrolled in its Driver program. Lyft offers an App interface for Drivers (Lyft Driver App) through which Drivers can accept ride requests from Riders.[3] Lyft also offers an App interface for Riders (Lyft Rider App) through which Riders can enter a destination and request a ride from the network of Lyft Drivers.[2] Lyft deploys dispatching algorithms to process rideshare requests and match rideshare Drivers with Riders based on the proximity of participants to one another.[1–4] Through the Lyft Driver App and Lyft Rider App, Lyft employs methods of notifying a user of a portable communication device.

U.S. Patent No. 6,944,443

Claim 1

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determining a location of a second portable communication device of a second user;

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notifying the first user of a presence of the second user if the location of the second portable communication device is within the same region containing the first portable communication device;

determining a common meeting point for the first and second users;

notifying the first user of the common meeting point on the first portable communication device; and

notifying the second user of the common meeting point on the second portable communication device.

Infringement by Lyft Rideshare

Lyft offers an App interface for Riders (Lyft Rider App) to request rides and an App interface for Drivers (Lyft Driver App) to accept rideshare requests. Lyft Drivers and Riders may be first and second users. The Driver and Rider Apps, running on drivers' and riders' portable communication devices, periodically determine their locations.[1]

B. Information We Collect When You Use the Lyft Platform

Location Information. Great rides start with an easy and accurate pickup. The Lyft Platform collects location information (including GPS and WiFi data) differently depending on your Lyft app settings and device permissions as well as whether you are using the platform as a Rider or Driver:

- Riders: We collect your device's precise location when you open and use the Lyft app, including while the app is running in the background from the time you request a ride until it ends. Lyft also tracks the precise location of scooters and e-bikes at all times.
- Drivers: We collect your device's precise location when you open and use the app, including while the app is running in the background when it is in driver mode. We also collect precise location for a limited time after you exit driver mode in order to detect ride incidents, and continue collecting it until a reported or detected incident is no longer active.

U.S. Patent No. 6,944,443

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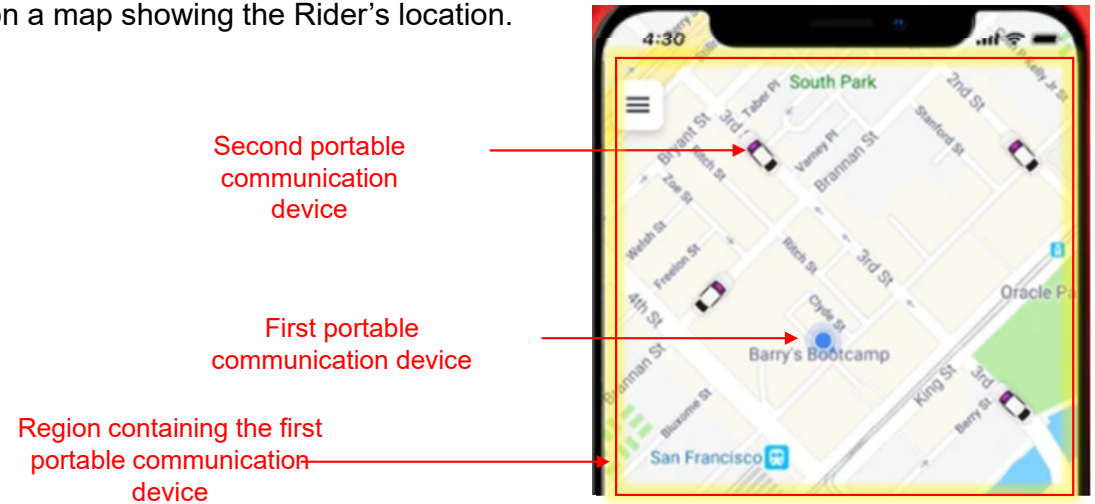
Infringement by Lyft Rideshare

Lyft uses the location data collected from Rider's portable communication device via the Lyft Rider App and a Driver's portable communication device via the Lyft Driver App to make driver dispatch decisions.[1,4] Lyft implements matching algorithms on its servers to match a Rider with a Driver.[4] When a Rider submits a ride request, on information and belief, a Lyft server determines whether the Driver's location (the location of the second portable communication device) is within the same region as the Rider (a region containing the first portable communication device). The Rider App running on the Rider's phone (the first user) notifies the rider of a presence of the Driver (the second user) if the Driver's location is within the same region as the Rider. As shown in the Lyft Rider App interface below[2], the Rider App notifies the Rider of nearby Drivers by displaying car icons on a map showing the Rider's location.



U.S. Patent No. 6,944,443

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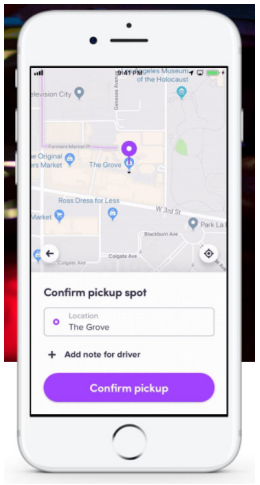
A method for notifying a user of a portable communication device, the method of comprising: determining a location of a first portable communication device of a first user; determining a location of a second portable communication device of a second user; determining whether the location of the second portable communication device is within a same region containing the first portable communication device; notifying the first user of a presence of the second user if the location of the second portable communication device is within the same region containing the first portable communication device; determining a common meeting point for the first and second users; notifying the first user of the common meeting point on the first portable communication device; and notifying the second user of the common meeting point on the second portable communication device.	On information and belief, a Lyft server determines where the Driver should pick-up the Rider (a common meeting point for the first and second users). Lyft uses various protocols for determining a common meeting point for the Rider and Driver. When a Rider requests a ride using the Lyft Rider App, the Lyft Rider App will automatically set the Rider's current address as the pickup location.[5] As shown below, the Rider may edit the pickup location by either (i) entering an address where the Rider would like to be picked-up or (ii) pinning the pickup spot on the map.[6] In another example, when the pickup location is at an airport, the app will set the pickup location at a designated pickup area.[7] 

U.S. Patent No. 6,944,443

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notifying the first user of a presence of the second user if the location of the second portable communication device is within the same region containing the first portable communication device;

determining a common meeting point for the first and second users;

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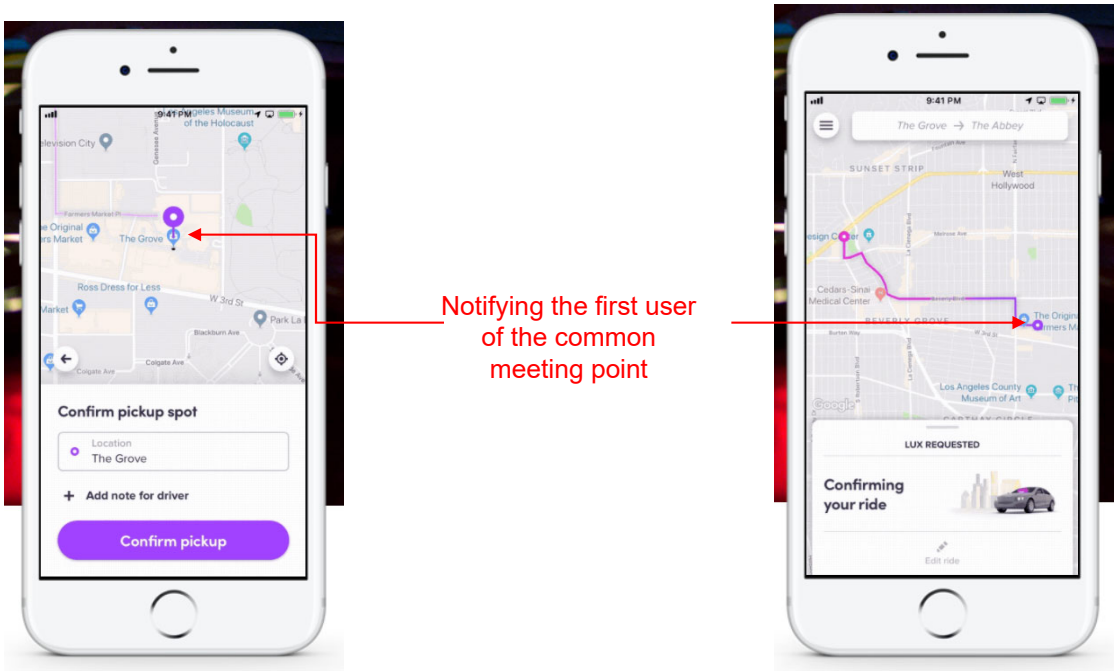
Infringement by Lyft Rideshare

The Rider (the first user) is notified of the pickup location (the common meeting point). The Rider App notifies the Rider of the pickup location by displaying the pickup location via the Lyft Rider App on the Rider's device (on the first portable communication device). Further, as shown below, after selecting "Confirm pickup" on the Lyft App, the Rider App displays the pickup location on a map.[6]



U.S. Patent No. 6,944,443

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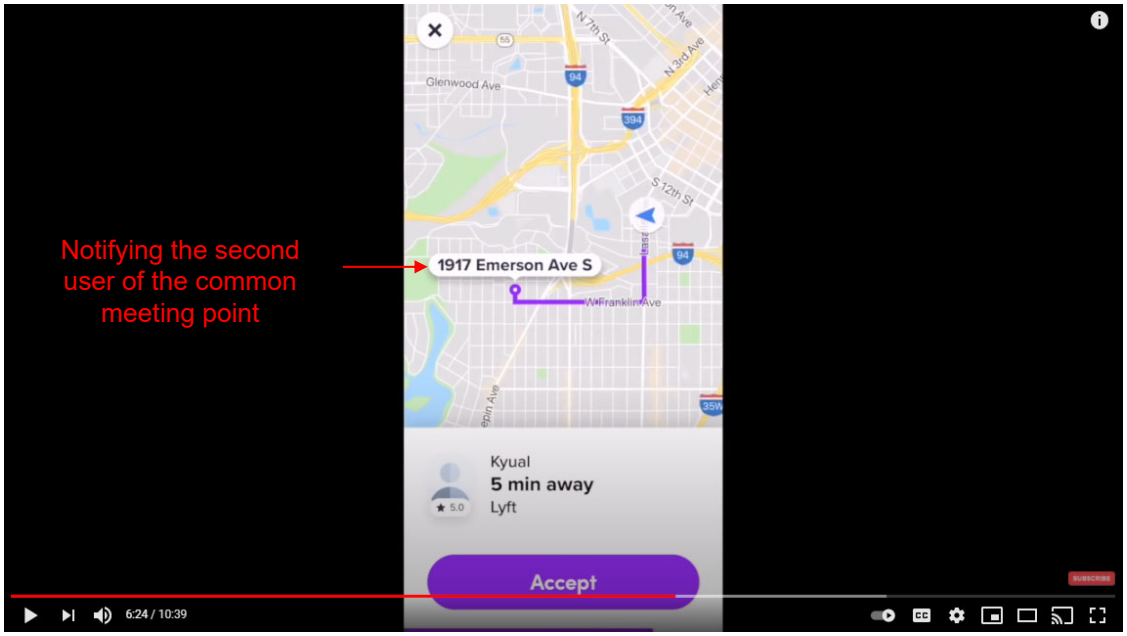
A method for notifying a user of a portable communication device, the method of comprising: determining a location of a first portable communication device of a first user; determining a location of a second portable communication device of a second user; determining whether the location of the second portable communication device is within a same region containing the first portable communication device; notifying the first user of a presence of the second user if the location of the second portable communication device is within the same region containing the first portable communication device; determining a common meeting point for the first and second users; notifying the first user of the common meeting point on the first portable communication device; and notifying the second user of the common meeting point on the second portable communication device.	The Driver (the second user) is also notified of the pickup location (the common meeting point). The Driver App notifies the Driver of the pickup location by displaying the pickup location via the Driver App on the Driver's mobile device (on the second portable communication device). 

U.S. Patent No. 6,944,443

Claim 3	Infringement by Lyft Rideshare
A method for notifying a user of a portable communication device, the method comprising: determining a location of a first portable communication device of a first user; determining a location of a second portable communication device of a second user; determining whether the first user has permission to locate the second user; if so, determining whether the location of the second portable communication device is within a same region containing the first portable communication device; if so, notifying the first user of the location of the second portable communication device of the second user; determining a common meeting point for the first and second users; notifying the first user of the common meeting point on the first portable communication device; and notifying the second user of the common meeting point on the second portable communication device.	Through the Lyft Platform, Lyft offers rideshare services to customers using Drivers it has enrolled in its Driver program. Lyft offers an App interface for Drivers (Lyft Driver App) through which Drivers can accept ride requests from Riders.[3] Lyft also offers an App interface for Riders (Lyft Rider App) through which Riders can enter a destination and request a ride from the network of Lyft Drivers.[2] Lyft deploys dispatching algorithms to process rideshare requests and match rideshare Drivers with Riders based on the proximity of participants to one another.[1–4] Through the Lyft Driver App and Lyft Rider App, Lyft employs methods of notifying a user of a portable communication device.

U.S. Patent No. 6,944,443

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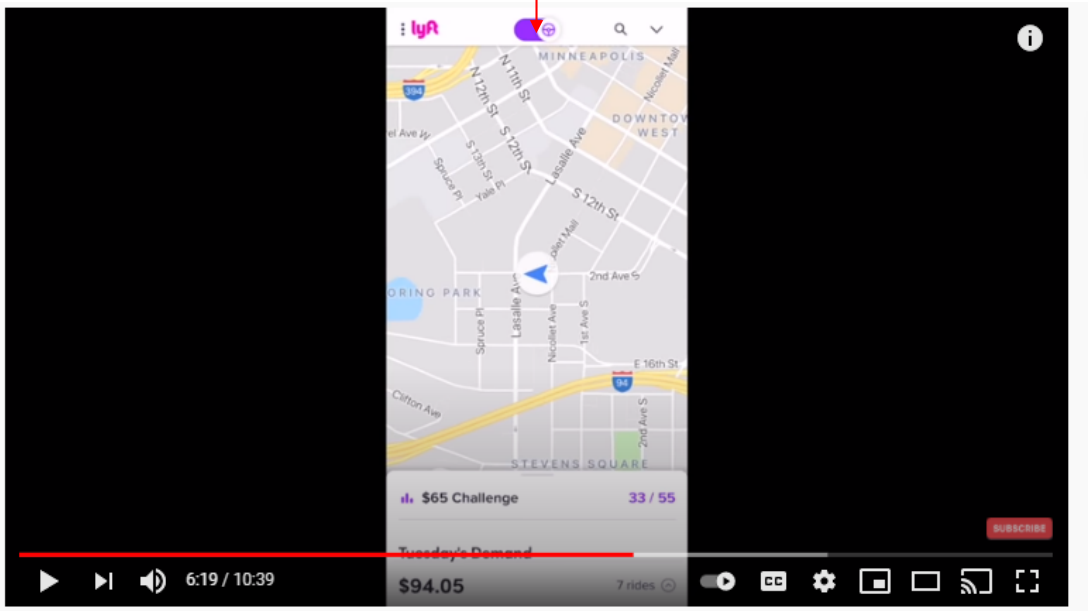
A method for notifying a user of a portable communication device, the method comprising: determining a location of a first portable communication device of a first user; determining a location of a second portable communication device of a second user; determining whether the first user has permission to locate the second user; if so, determining whether the location of the second portable communication device is within a same region containing the first portable communication device; if so, notifying the first user of the location of the second portable communication device of the second user; determining a common meeting point for the first and second users; notifying the first user of the common meeting point on the first portable communication device; and notifying the second user of the common meeting point on the second portable communication device.	Lyft's servers determine whether a Rider (the first user) has permission to locate the Driver (the second user). For example, Lyft's servers, which run its matching algorithm, determines whether a Rider has permission to locate a Driver based on whether a Driver has gone online on the Lyft Driver App and is accepting ride requests.[8] Permission to locate a Driver (whether Driver is online and accepting ride requests) 

U.S. Patent No. 6,944,443

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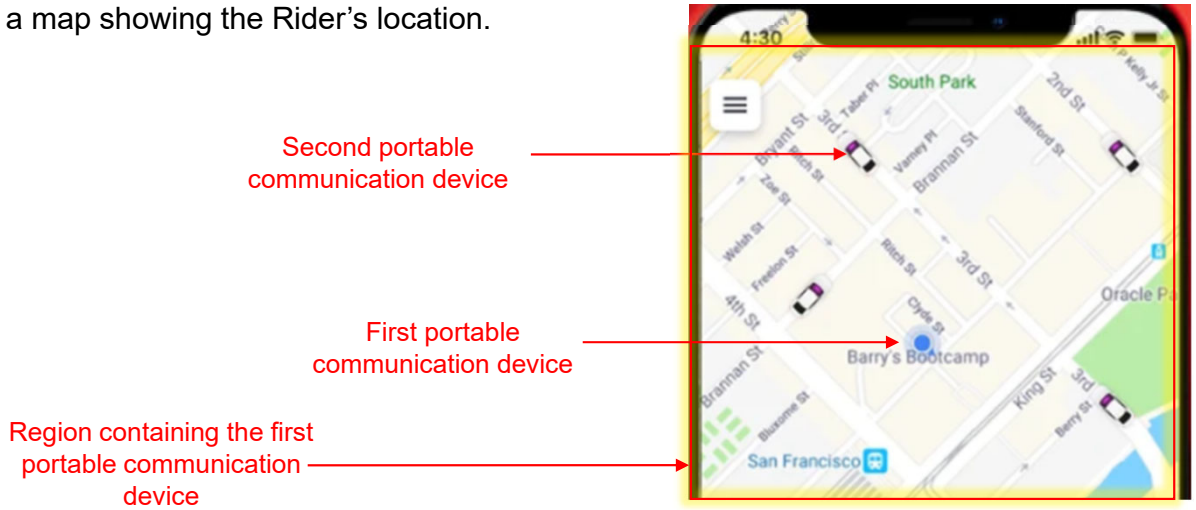

U.S. Patent No. 6,944,443

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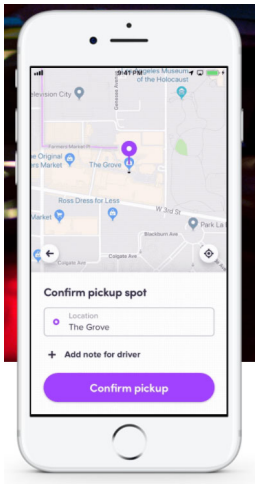
A method for notifying a user of a portable communication device, the method comprising: determining a location of a first portable communication device of a first user; determining a location of a second portable communication device of a second user; determining whether the first user has permission to locate the second user; if so, determining whether the location of the second portable communication device is within a same region containing the first portable communication device; if so, notifying the first user of the location of the second portable communication device of the second user; determining a common meeting point for the first and second users; notifying the first user of the common meeting point on the first portable communication device; and notifying the second user of the common meeting point on the second portable communication device.	On information and belief, one or more server of the Lyft Platform determine where the Driver should pick-up the Rider (a common meeting point for the first and second users). Lyft uses various protocols for determining a common meeting point for the Rider and Driver. When a Rider requests a ride using the Lyft Rider App, the Lyft Rider App will automatically set the Rider's current address as the pickup location.[5] As shown below, the Rider may edit the pickup location by either (i) entering an address where the Rider would like to be picked-up or (ii) pinning the pickup spot on the map.[6] In another example, when the pickup location is at an airport, the app will move the pickup location automatically to a designated pickup area.[7] 

U.S. Patent No. 6,944,443

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A method for notifying a user of a portable communication device, the method comprising:

determining a location of a first portable communication device of a first user;

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determining whether the first user has permission to locate the second user;

if so, determining whether the location of the second portable communication device is within a same region containing the first portable communication device;

if so, notifying the first user of the location of the second portable communication device of the second user;

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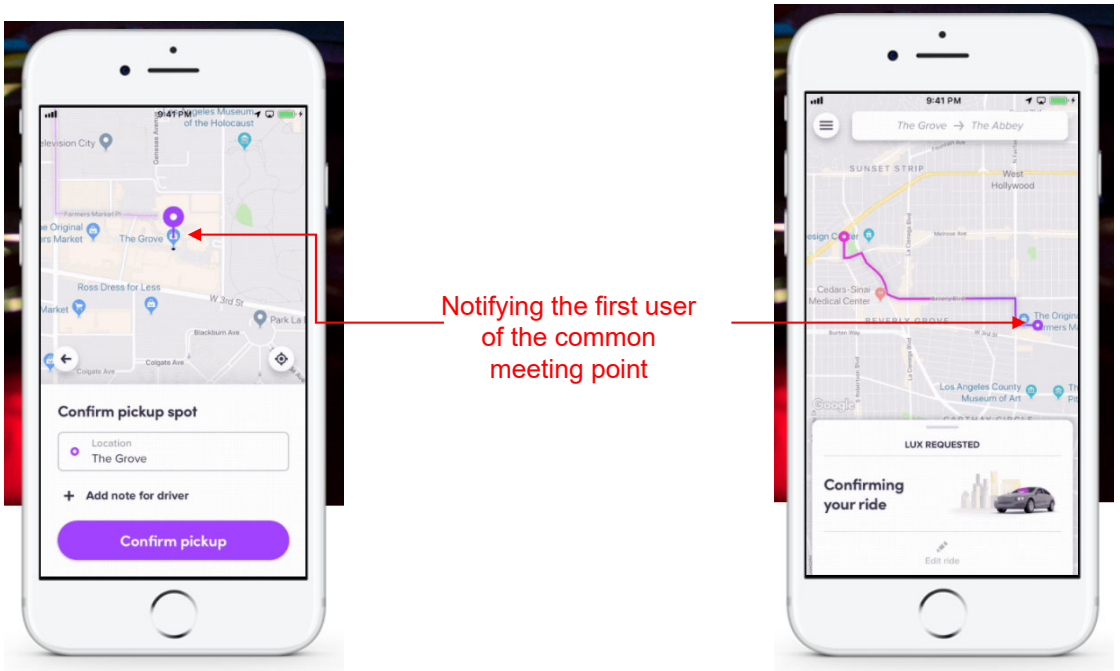
Infringement by Lyft Rideshare

The Rider (the first user) is notified of the pickup location (the common meeting point). The Rider App notifies the Rider of the pickup location by displaying the pickup location via the Lyft Rider App on the Rider's device (on the first portable communication device). Further, as shown below, after selecting "Confirm pickup" on the Lyft App, the Rider App displays the pickup location on a map.[6]



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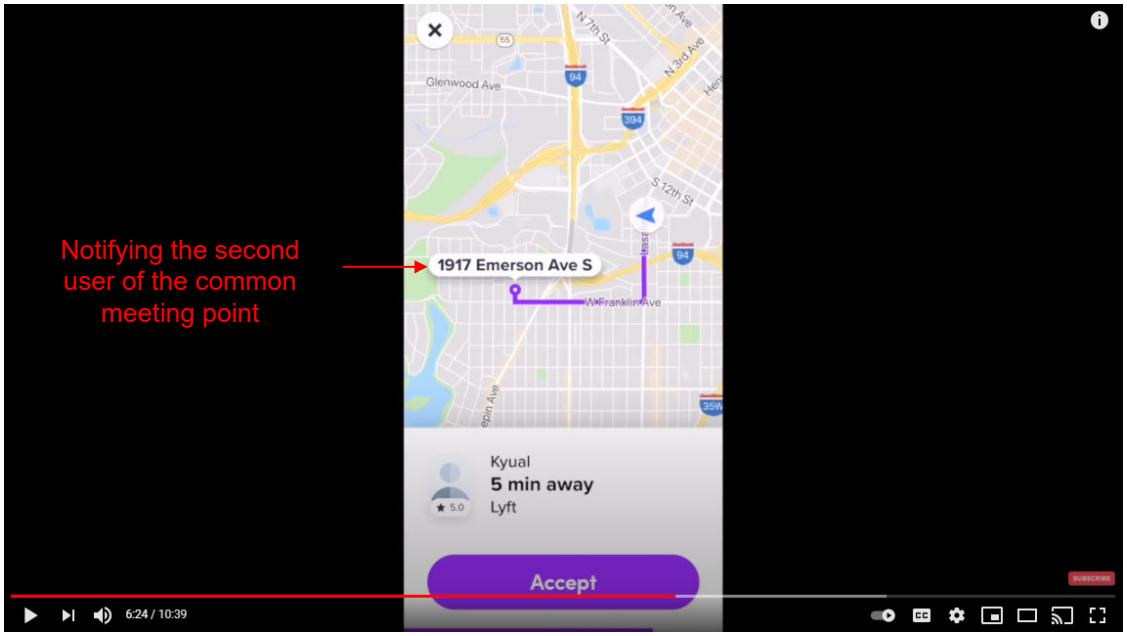
A method for notifying a user of a portable communication device, the method comprising: determining a location of a first portable communication device of a first user; determining a location of a second portable communication device of a second user; determining whether the first user has permission to locate the second user; if so, determining whether the location of the second portable communication device is within a same region containing the first portable communication device; if so, notifying the first user of the location of the second portable communication device of the second user; determining a common meeting point for the first and second users; notifying the first user of the common meeting point on the first portable communication device; and notifying the second user of the common meeting point on the second portable communication device.	The Driver (the second user) is also notified of the pickup location (the common meeting point). The Driver App notifies the Driver of the pickup location by displaying the pickup location via the Driver App on the Driver's mobile device (on the second portable communication device). 

’443 Reference Materials

[1] Lyft Privacy Policy, available at https://www.lyft.com/privacy.

[2] Lyft Apple App Store Preview, available at https://apps.apple.com/us/app/lyft/id529379082.

[3] Lyft Driver Apple App Store Preview, available at https://apps.apple.com/us/app/lyft-driver/id1203077485.

[4] A New Real-Time Map-Matching Algorithm at Lyft, Marie Douriez et al. (Aug. 11, 2020), available at https://eng.lyft.com/a-new-real-time-map-matching-algorithm-at-lyft-da593ab7b006.

[5] Lyft Lux, available at https://help.lyft.com/hc/en-us/articles/115013079988-How-to-request-a-ride.

[6] How to Use Lyft App – Easy Beginner Lyft Tutorial, available at https://www.lyft.com/rider/premium.

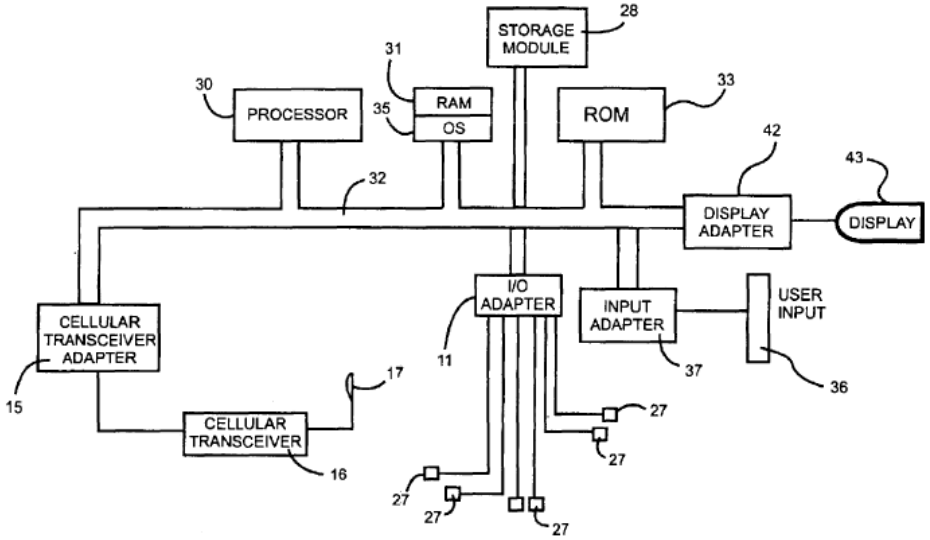
[7] Lyft at ORD Airport | How will I know exactly where to meet my driver?, available at https://www.lyft.com/rider/airports/ord.

[8] How to Use Lyft Driver App [2019 Training & Tutorial – Sign Up for Lyft], available at https://www.youtube.com/watch?v=a8n2--HlzDU.

Overview of Patent

U.S. Patent No. 6,847,871	
Title	Continuously monitoring and correcting operational conditions in automobiles from a remote location through wireless transmissions
Issue Date	January 25, 2005
Priority Date	August 29, 2002
Expiration Date	September 13, 2022
Abstract	Continuously monitoring automobile operations, performance and operating conditions from the remote diagnostic centers through Continuous wireless transmissions so that faults may be immediately recognized and corrected or the operator warned or actions remotely initiated to limit or prevent damage or safety hazards. A plurality of sensing devices in said automobile; each device for respectively continuously sensing an operational parameter of the automobile; a wireless transmitter in the automobile for transmitting the continuously sensed parameters to a diagnostic station remote from automobile; apparatus in the diagnostic station for analyzing said parameters in order to determine defective operational conditions in the automobile; and apparatus associated with said diagnostic station for wireless transmission of data relative to the determined defective operating conditions back to said automobile.

FIG. 1



U.S. Patent No. 6,847,871

Claim 1	Infringement by Lyft Self-Driving Vehicles
A system for continuously monitoring and correcting operational conditions in an automobile comprising: a plurality of sensing devices in said automobile each device for respectively continuously sensing an operational parameter of said automobile; a wireless transmitter in said automobile for transmitting said continuously sensed parameters to a diagnostic station remote from said automobile; apparatus in said diagnostic station for analyzing said parameters in order to determine defective operational conditions in said automobile; and apparatus associated with said diagnostic station for wireless transmission of data relative to said determined defective operating conditions back to said automobile.	In addition to Lyft's open platform initiative for connecting Lyft passengers with autonomous vehicle fleets operated by its strategic partners (e.g., "Motional," formerly "Aptiv"), Lyft has also established its own internal group known as "Level 5" for creating and refining its own self-driving systems.[1], [2] As Lyft explains, "Level 5 is developing a self-driving system for the Lyft network to ensure access to the benefits of this technology for millions of riders."[2] In connection with its self-driving efforts, Lyft has developed a system for continuously monitoring and correcting operational conditions in its self-driving vehicles. On information and belief, Lyft continuously monitors operational conditions of its vehicles and logs all detected data for subsequent analysis.[3] ("Lyft also has to manage a massive amount of data gathered from simulations and from its AV fleet, and it takes advantage of Amazon Simple Storage Service (Amazon S3) to store and access an ever-expanding dataset as Lyft increases the number of sensors on its test vehicles.") As Lyft explains, these sensors are used for both environmental perception and ensuring safety of passengers: "[o]ur self-driving system also monitors safety-critical aspects 100 times every second."[4] On information and belief, the Lyft platform utilizes a cloud backend to manage its fleet of autonomous vehicles to receive and manage sensor data from its autonomous vehicles.[4] Discovery will reveal the precise architecture of Lyft's platforms. For simplicity, Lyft's self-driving technology will collectively be referred to herein as the "Lyft Level 5 platform" with the understanding that this may encompass multiple infrastructure, business, and/or product layers used by Lyft to implement its services.

U.S. Patent No. 6,847,871

Claim 1	Infringement by Lyft Self-Driving Vehicles
A system for continuously monitoring and correcting operational conditions in an automobile comprising: a plurality of sensing devices in said automobile each device for respectively continuously sensing an operational parameter of said automobile; a wireless transmitter in said automobile for transmitting said continuously sensed parameters to a diagnostic station remote from said automobile; apparatus in said diagnostic station for analyzing said parameters in order to determine defective operational conditions in said automobile; and apparatus associated with said diagnostic station for wireless transmission of data relative to said determined defective operating conditions back to said automobile.	Lyft's Level 5 platform continuously monitors its self-driving vehicles using a plurality of sensing devices for continuously sensing an operational parameter of an automobile. As Lyft explains, the technologies for sensing these operational parameters include an "in-house sensor suite" including at least LIDAR, cameras, radar, and proprietary software that serves as the brains of the car.[1], [6] On information and belief, the Lyft Level 5 system also integrates with a plurality of vehicle electronic control units (ECUs) present and standard in modern automobiles including the sensors associated therewith for monitoring other operational parameters of the vehicles. Lyft also confirms that its self-driving vehicles undergo extensive maintenance and monitoring routines to ensure that they are performing as expected, and the vehicles are tested via both on-road testing and extensive simulations.[8] Lyft explains that they "monitor the safety performance of our system through testing and simulation, and iteratively feed that experience back to inform our safety approach through our safety case."[4] Further, Lyft explains that "our risk-based testing approach continually monitors for unknown, uncontrolled, or not-yet-identified risks – such as system faults in the self-driving system or the base vehicle, for example."[4] On information and belief, based on these statements, Lyft monitors operational parameters of its vehicles using both its in-house sensor suite and sensors associated with the base vehicle (a plurality of sensing devices). During the testing of its autonomous vehicles, an operator rides along in the car in case an issue arises so that the operator can take over control of the vehicle if needed. [4] Lyft explains that the self-driving system self-monitors (on information and belief, using the sensors) and can provide notification when it deduces a safety operator should take control. [4]

U.S. Patent No. 6,847,871

Claim 1

A system for continuously monitoring and correcting operational conditions in an automobile comprising:

a plurality of sensing devices in said automobile each device for respectively continuously sensing an operational parameter of said automobile;

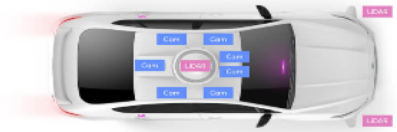
a wireless transmitter in said automobile for transmitting said continuously sensed parameters to a diagnostic station remote from said automobile;

apparatus in said diagnostic station for analyzing said parameters in order to determine defective operational conditions in said automobile; and

apparatus associated with said diagnostic station for wireless transmission of data relative to said determined defective operating conditions back to said automobile.

Infringement by Lyft Self-Driving Vehicles

Level 5's in-house sensor suite



Lidar

Our vehicles are equipped with 40 and 64-beam lidars on the roof and bumper. They have an Azimuth resolution of 0.2 degrees and jointly produce ~216,000 points at 10 Hz. Firing directions of all lidars are synchronized.

Camera

Our vehicles are also equipped with six 360° cameras built in-house. One long-focal camera points upward. Cameras are synchronized with the lidar so the beam is at the center of each camera's field of view when images are captured.

U.S. Patent No. 6,847,871

Claim 1	Infringement by Lyft Self-Driving Vehicles
A system for continuously monitoring and correcting operational conditions in an automobile comprising: a plurality of sensing devices in said automobile each device for respectively continuously sensing an operational parameter of said automobile; a wireless transmitter in said automobile for transmitting said continuously sensed parameters to a diagnostic station remote from said automobile; apparatus in said diagnostic station for analyzing said parameters in order to determine defective operational conditions in said automobile; and apparatus associated with said diagnostic station for wireless transmission of data relative to said determined defective operating conditions back to said automobile.	On information and belief, the Lyft Level 5 platform includes a wireless transmitter for transmitting the continuously sensed parameters to a diagnostic station (one or more Lyft servers) remote from the vehicle. For example, on information and belief, each self-driving vehicle is configured to communicate with Lyft servers for transmitting and receiving information related to ride requests, trip updates, GPS information, and for customer support functions.[4] In addition, it is believed that at least some of the sensed parameters as detected by the sensors are wirelessly transmitted to the server for analysis (either during, or after operation) to determine whether the self-driving vehicle is functioning properly. For instance, Lyft explains that it employs a cloud backend to manage its fleet of vehicles and the sensor data associated therewith.[4]

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Claim 1	Infringement by Lyft Self-Driving Vehicles
A system for continuously monitoring and correcting operational conditions in an automobile comprising: a plurality of sensing devices in said automobile each device for respectively continuously sensing an operational parameter of said automobile; a wireless transmitter in said automobile for transmitting said continuously sensed parameters to a diagnostic station remote from said automobile; apparatus in said diagnostic station for analyzing said parameters in order to determine defective operational conditions in said automobile; and apparatus associated with said diagnostic station for wireless transmission of data relative to said determined defective operating conditions back to said automobile.	On information and belief, the Lyft Level 5 platform includes an apparatus in said diagnostic station (server) for analyzing the sensed data to determine if there is a defective operational condition in the vehicle. Lyft explains that: "Our self-driving system also monitors safety-critical aspects 100 times every second. In the event of a detected failure, the system can automatically disengage and simultaneously inform our operators to resume full manual control of the vehicle . . . . For our future-generation autonomous vehicle platform, we are actively working on the design of a fault-tolerant system architecture. This architecture could include redundant sensors, compute, power, and actuation that are capable of handling failures and bringing the vehicle to a safe state without the need for human intervention."[4] On information and belief, this monitoring and analysis of operational conditions occurs on one or more Lyft servers. Accordingly, the Lyft Level 5 platform would necessarily include an apparatus for analyzing the sensed data (parameters) to determine if a defect is detected, otherwise there would be no way to detect any failures as Lyft suggests.

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Claim 1	Infringement by Lyft Self-Driving Vehicles
A system for continuously monitoring and correcting operational conditions in an automobile comprising: a plurality of sensing devices in said automobile each device for respectively continuously sensing an operational parameter of said automobile; a wireless transmitter in said automobile for transmitting said continuously sensed parameters to a diagnostic station remote from said automobile; apparatus in said diagnostic station for analyzing said parameters in order to determine defective operational conditions in said automobile; and apparatus associated with said diagnostic station for wireless transmission of data relative to said determined defective operating conditions back to said automobile.	On information and belief, Lyft's Level 5 platform includes an apparatus associated with the diagnostic station (server) for wirelessly transmitting data relative to any determined defective operation conditions from the diagnostic station back to the self-driving vehicle. For instance, in order to automatically disengage and inform the operator to resume manual control of the vehicle, it is believed that data must necessarily be sent from the Lyft server back to the vehicle.[4] Lyft also explains that its self-driving vehicles include a human machine interface (HMI) including both visual and audio elements to inform operators of various operational conditions such as trip updates, system status, and customer support.[4] On information and belief, data related to a determined defective operating condition is wirelessly transmitted back to the vehicle such that the information may be displayed to the operator via the HMI. In addition, passengers within the self-driving vehicle likewise have access to this information: "Once inside the vehicle, all riders have access to ride-critical information, including their location along the route and status of critical safety systems."[4] Accordingly, this suggests that at least some information related to the sensed operational conditions is transmitted to a Lyft server, analyzed, and transmitted back to the vehicle (e.g., to a rider's phone associated with the vehicle during a ride).

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Claim 2	Infringement by Lyft Self-Driving Vehicles
The system for monitoring and correcting operational conditions of claim 1 wherein: said automobile further includes apparatus for correcting said defective operational conditions; and said data transmitted back to said automobile includes data for activating said apparatus for correcting said defective operational conditions.	As Lyft explains: "Our self-driving system also monitors safety-critical aspects 100 times every second. In the event of a detected failure, the system can automatically disengage and simultaneously inform our operators to resume full manual control of the vehicle . . . ." Further, each Lyft self-driving vehicle includes "proprietary software that serves as the brains of a car."[1] Each Lyft self-driving vehicle is equipped with numerous disengagement methods for disengaging autonomous operation.[4] Lyft describes that its system can "automatically disengage" in the event of a detected failure.[4] Accordingly, on information and belief, each self-driving vehicle necessarily includes some apparatus (e.g., the brains of the car with Lyft proprietary software) for correcting the defective operational condition (by disengaging the autonomous drive mode). On information and belief, the data received by the self-driving vehicle related to the analysis performed by the server would activate this apparatus.

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Claim 3	Infringement by Lyft Self-Driving Vehicles
The system for monitoring and correcting operational conditions of claim 2 wherein said apparatus for correcting said defective conditions corrects said conditions transparently to the operator of said automobile.	Lyft describes that "In the event of a detected failure, the system can automatically disengage and simultaneously inform our operators to resume full manual control of the vehicle."[4] Accordingly, the correction of the defective operational condition (disengaging the autonomous mode) is transparent to the operator of the vehicle (the operator is informed).

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Claim 4	Infringement by Lyft Self-Driving Vehicles
The system for monitoring and correcting operational conditions of claim 2 wherein: said automobile includes a plurality of embedded data processors for controlling automobile operations; and said defective operating conditions are defects within said embedded data processors.	On information and belief, the vehicles of the Lyft Level 5 platform include a plurality of embedded data processors for controlling automobile operations, and the detected defective operating conditions are defects within said embedded data processors. In order for the self-driving vehicle to continuously perceive the environment and operate in an autonomous manner, on information and belief, the self-driving vehicle necessarily includes a plurality of embedded data processors for controlling various vehicle operations (e.g., steering, accelerating, sensing the environment, etc.). On information and belief, the Lyft Level 5 system also integrates with a plurality of vehicle electronic control units (ECUs) present and standard in modern automobiles including the sensors associated therewith. Lyft describes that its self-driving system installed in its vehicles "self-monitors and can provide notification when it deduces that the safety operator should take control."[4] Because the system is configured for self-monitoring, it would be understood that the system could detect defective operating conditions within the embedded data processors (e.g., if the LIDAR or radar were not functioning properly to detect the environment around the car, if the steering were not functioning, etc.).

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Claim 5	Infringement by Lyft Self-Driving Vehicles
The system for monitoring and correcting operational conditions of claim 1 further including an output device for informing the automobile operator of said defective operating conditions.	The Lyft Level 5 platform includes an output device for informing the automobile operator of said defective operating conditions. Lyft explains that each self-driving vehicle includes an on-board human machine interface (HMI) for delivering information to an operator of the vehicle, such as critical autonomous vehicle system performance and system status. [4] The HMI includes visual and audio outputs, and in one example, provides information to the operator of any disengagement from autonomous control due to a detected defect (informing the operator of a defective operating condition).[4]

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Claim 6	Infringement by Lyft Self-Driving Vehicles
The system for monitoring and correcting operational conditions of claim 5 wherein said output device includes a display.	Lyft explains that the on-board HMI for each self-driving vehicle includes visual elements for notifying an operator regarding information related to operation of the vehicle, which would be understood to include a display.[4]

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Claim 7	Infringement by Lyft Self-Driving Vehicles
The system for monitoring and correcting operational conditions of claim 5 wherein said output device is enabled to inform the operator of dangerous operating conditions.	Lyft explains that each self-driving vehicle includes an HMI for delivering information to an operator of the vehicle, such as critical autonomous vehicle system performance and system status.[4] The HMI includes visual and audio outputs, and in one example, informs the operator of dangerous operating conditions: “the self-driving system self-monitors and can provide notification when it deduces that the safety operator should take control” (e.g., due to a detected dangerous condition).[4]

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Claim 8	Infringement by Lyft Self-Driving Vehicles
The system for monitoring and correcting operational conditions of claim 5 further including apparatus in said automobile for limiting the operation of the automobile in response to a determined defective operating condition.	Lyft explains that "In the event of a detected failure, the system can automatically disengage and simultaneously inform our operators to resume full manual control of the vehicle."[4] Each self-driving vehicle necessarily includes some form of apparatus for automatically disengaging the autonomous driving mode, and such disengagement is a limitation on the operation of the vehicle (the autonomous driving mode is no longer engaged).

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Claim 10	Infringement by Lyft Self-Driving Vehicles
A method for continuously monitoring and correcting operational conditions in an automobile comprising: continuously sensing a plurality of operational parameters of said automobile; wirelessly transmitting said continuously sensed parameters to a diagnostic station remote from said automobile; analyzing said parameters in said diagnostic station in order to determine defective operational conditions in said automobile; and wirelessly transmitting data relative to said determined defective operating conditions from said diagnostic station back to said automobile.	In addition to Lyft's open platform initiative for connecting Lyft passengers with autonomous vehicle fleets operated by its strategic partners (e.g., "Motional," formerly "Aptiv"), Lyft has also established its own internal group known as "Level 5" for creating and refining its own self-driving systems.[1], [2] As Lyft explains, "Level 5 is developing a self-driving system for the Lyft network to ensure access to the benefits of this technology for millions of riders."[2] In connection with its self-driving efforts, Lyft has developed a method for continuously monitoring and correcting operational conditions in its self-driving vehicles. On information and belief, Lyft continuously monitors operational conditions of its vehicles and logs all detected data for subsequent analysis. [3] ("Lyft also has to manage a massive amount of data gathered from simulations and from its AV fleet, and it takes advantage of Amazon Simple Storage Service (Amazon S3) to store and access an ever-expanding dataset as Lyft increases the number of sensors on its test vehicles.") As Lyft explains, these sensors are used for both environmental perception and ensuring safety of passengers: "[o]ur self-driving system also monitors safety-critical aspects 100 times every second." [4] On information and belief, the Lyft platform utilizes a cloud backend to manage its fleet of autonomous vehicles to receive and manage sensor data from its autonomous vehicles. [4] Discovery will reveal the precise architecture of Lyft's platforms. For simplicity, Lyft's self-driving technology will collectively be referred to herein as the "Lyft Level 5 platform" with the understanding that this may encompass multiple infrastructure, business, and/or product layers used by Lyft to implement its services.

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Claim 10	Infringement by Lyft Self-Driving Vehicles
A method for continuously monitoring and correcting operational conditions in an automobile comprising: continuously sensing a plurality of operational parameters of said automobile; wirelessly transmitting said continuously sensed parameters to a diagnostic station remote from said automobile; analyzing said parameters in said diagnostic station in order to determine defective operational conditions in said automobile; and wirelessly transmitting data relative to said determined defective operating conditions from said diagnostic station back to said automobile.	Lyft's Level 5 platform continuously monitors its self-driving vehicles. As Lyft explains, the technologies for obtaining these operational parameters include an "in-house sensor suite" including at least LIDAR, cameras, radar, and proprietary software that serves as the brains of the car.[1], [6] On information and belief, the Lyft Level 5 system also integrates with a plurality of vehicle electronic control units (ECUs) present and standard in modern automobiles including the sensors associated therewith. Lyft also confirms that its self-driving vehicles undergo extensive maintenance and monitoring routines to ensure that they are performing as expected, and the vehicles are tested via both on-road testing and extensive simulations.[8] Lyft explains that they "monitor the safety performance of our system through testing and simulation, and iteratively feed that experience back to inform our safety approach through our safety case." [4] Further, Lyft explains that "our risk-based testing approach continually monitors for unknown, uncontrolled, or not-yet-identified risks – such as system faults in the self-driving system or the base vehicle, for example."[4] On information and belief, based on these statements, Lyft monitors its vehicles using both its in-house sensor suite and sensors associated with the base vehicle. During the testing of its autonomous vehicles, an operator rides along in the car in the event that an issue arises so that the operator can take over if needed.[4] Lyft explains that the self-driving system self-monitors (on information and belief, using sensors) and can provide notification when it deduces a safety operator should take control.[4]

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Claim 10

A method for continuously monitoring and correcting operational conditions in an automobile comprising:

continuously sensing a plurality of operational parameters of said automobile;

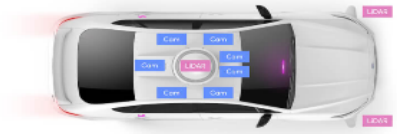
wirelessly transmitting said continuously sensed parameters to a diagnostic station remote from said automobile;

analyzing said parameters in said diagnostic station in order to determine defective operational conditions in said automobile; and

wirelessly transmitting data relative to said determined defective operating conditions from said diagnostic station back to said automobile.

Infringement by Lyft Self-Driving Vehicles

Level 5's in-house sensor suite



Lidar

Our vehicles are equipped with 40 and 64-beam lidars on the roof and bumper. They have an Azimuth resolution of 0.2 degrees and jointly produce ~216,000 points at 10 Hz. Firing directions of all lidars are synchronized.

Camera

Our vehicles are also equipped with six 360° cameras built in-house. One long-focal camera points upward. Cameras are synchronized with the lidar so the beam is at the center of each camera's field of view when images are captured.

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Claim 10	Infringement by Lyft Self-Driving Vehicles
A method for continuously monitoring and correcting operational conditions in an automobile comprising: continuously sensing a plurality of operational parameters of said automobile; wirelessly transmitting said continuously sensed parameters to a diagnostic station remote from said automobile; analyzing said parameters in said diagnostic station in order to determine defective operational conditions in said automobile; and wirelessly transmitting data relative to said determined defective operating conditions from said diagnostic station back to said automobile.	On information and belief, the continuously sensed parameters are wirelessly transmitted from the self-driving vehicles to Lyft's servers, which include a diagnostic station for analyzing the parameters and determining any defective operational conditions. For example, on information and belief, each self-driving vehicle is configured to communicate with Lyft servers for transmitting and receiving information related to ride requests, trip updates, GPS information, and for customer support functions. In addition, it is believed that at least some of the sensed parameters are wirelessly transmitted to the server for analysis to determine whether the self-driving vehicle is functioning properly (either during, or after operation). For instance, Lyft explains that it employs a cloud backend to manage its fleet of vehicles and the sensor data associated therewith. [4]

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Claim 10	Infringement by Lyft Self-Driving Vehicles
A method for continuously monitoring and correcting operational conditions in an automobile comprising: continuously sensing a plurality of operational parameters of said automobile; wirelessly transmitting said continuously sensed parameters to a diagnostic station remote from said automobile; analyzing said parameters in said diagnostic station in order to determine defective operational conditions in said automobile; and wirelessly transmitting data relative to said determined defective operating conditions from said diagnostic station back to said automobile.	On information and belief, a server of the Lyft platform analyzes the sensed data to determine if there is a defective operational condition. Lyft explains that: "Our self-driving system also monitors safety-critical aspects 100 times every second. In the event of a detected failure, the system can automatically disengage and simultaneously inform our operators to resume full manual control of the vehicle . . . . For our future-generation autonomous vehicle platform, we are actively working on the design of a fault-tolerant system architecture. This architecture could include redundant sensors, compute, power, and actuation that are capable of handling failures and bringing the vehicle to a safe state without the need for human intervention."[4] On information and belief, this monitoring and analysis of operational conditions occurs on one or more Lyft servers.

U.S. Patent No. 6,847,871

Claim 10	Infringement by Lyft Self-Driving Vehicles
A method for continuously monitoring and correcting operational conditions in an automobile comprising: continuously sensing a plurality of operational parameters of said automobile; wirelessly transmitting said continuously sensed parameters to a diagnostic station remote from said automobile; analyzing said parameters in said diagnostic station in order to determine defective operational conditions in said automobile; and wirelessly transmitting data relative to said determined defective operating conditions from said diagnostic station back to said automobile.	On information and belief, Lyft's Level 5 platform wirelessly transmits data relative to any determined defective operation conditions from the diagnostic station back to the self-driving vehicle. For instance, in order to automatically disengage and inform the operator to resume manual control of the vehicle, it is believed that data must necessarily be sent from the Lyft server back to the vehicle.[4] Lyft also explains that its self-driving vehicles include a human machine interface (HMI) including both visual and audio elements to inform operators of various operational conditions such as trip updates, system status, and customer support. [4] On information and belief, data related to a determined defective operating condition is wirelessly transmitted back to the vehicle such that the information may be displayed to the operator via the HMI. In addition, riders within the vehicle likewise have access to this information: "Once inside the vehicle, all riders have access to ride-critical information, including their location along the route and status of critical safety systems."[4] Accordingly, this suggests that at least some information related to the sensed operational conditions is transmitted to a Lyft server, analyzed, and transmitted back to the vehicle (e.g., to a rider's phone associated with the vehicle during a ride).

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Claim 11	Infringement by Lyft Self-Driving Vehicles
The method for monitoring and correcting operational conditions of claim 10 including the step of correcting said defective operational conditions in said automobile responsive to said data transmitted back to said automobile.	As Lyft explains: "Our self-driving system also monitors safety-critical aspects 100 times every second. In the event of a detected failure, the system can automatically disengage and simultaneously inform our operators to resume full manual control of the vehicle . . . ." Further, each Lyft self-driving vehicle includes "proprietary software that serves as the brains of a car."[1] Each Lyft self-driving vehicle is equipped with numerous disengagement methods for disengaging autonomous operation.[4] Lyft describes that its system can "automatically disengage" in the event of a detected failure.[4] Accordingly, on information and belief, each self-driving vehicle corrects the defective operational condition (disengaging the autonomous drive mode) On information and belief, the data received by the self-driving vehicle related to the analysis performed by the server would cause this correction.

U.S. Patent No. 6,847,871

Claim 12	Infringement by Lyft Self-Driving Vehicles
The method for monitoring and correcting operational conditions of claim 11 wherein said defective conditions are corrected transparently to the operator of said automobile.	Lyft describes that "In the event of a detected failure, the system can automatically disengage and simultaneously inform our operators to resume full manual control of the vehicle."[4] Accordingly, the correction of the defective operational condition (by disengaging the autonomous mode) is transparent to the operator of the vehicle (the operator is informed).

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Claim 13	Infringement by Lyft Self-Driving Vehicles
The method for monitoring and correcting operational conditions of claim 11 wherein: said automobile includes a plurality of embedded data processors for controlling automobile operations; and said defective operating conditions being corrected are defective operating conditions of said embedded data processors.	On information and belief, the vehicles of the Lyft Level 5 platform include embedded data processor for controlling automobile operations, and the detected defective operating conditions are defects within said embedded data processors. In order for the self-driving vehicle to continuously perceive the environment and operate in an autonomous manner, on information and belief, the self-driving vehicle necessarily includes a plurality of embedded data processors for controlling vehicle operation. On information and belief, the Lyft Level 5 system also integrates with a plurality of vehicle electronic control units (ECUs) present and standard in modern automobiles including the sensors associated therewith. Lyft describes that its self-driving system installed in its vehicles "self-monitors and can provide notification when it deduces that the safety operator should take control."[4] Because the system is configured for self-monitoring, it would be understood that the system could detect defective operating conditions within the embedded data processors (e.g., if the LIDAR or radar were not functioning properly to detect the environment around the car).

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Claim 14	Infringement by Lyft Self-Driving Vehicles
The method for monitoring and correcting operational conditions of claim 10 further including the step of informing the automobile operator of said defective operating conditions.	The Lyft Level 5 platform informs the automobile operator of said defective operating conditions. Lyft explains that each self-driving vehicle includes an on-board human machine interface (HMI) for delivering information to an operator of the vehicle, such as critical autonomous vehicle system performance and system status. [4] The HMI includes visual and audio outputs, and in one example, informs the operator of any disengagement from autonomous control due to a detected defect (informing the operator of a defective operating condition). [4]

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Claim 15	Infringement by Lyft Self-Driving Vehicles
The method for monitoring and correcting operational conditions of claim 14 wherein said defective operating conditions are displayed to inform the automobile operator.	Lyft explains that the on-board HMI for each self-driving vehicle includes visual elements for notifying an operator regarding information related to operation of the vehicle, which would be understood as being displayed to the operator.[4]

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Claim 16	Infringement by Lyft Self-Driving Vehicles
The method for monitoring and correcting operational conditions of claim 14 wherein said step of informing said automobile operator is enabled to inform the operator of dangerous operating conditions.	Lyft explains that each self-driving vehicle includes an HMI for delivering information to an operator of the vehicle, such as critical autonomous vehicle system performance and system status.[4] The HMI includes visual and audio outputs, and in one example, informs the operator of dangerous operating conditions: “the self-driving system self-monitors and can provide notification when it deduces that the safety operator should take control” (e.g., as the result of a detected dangerous condition.[4]

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Claim 17	Infringement by Lyft Self-Driving Vehicles
The method for monitoring and correcting operational conditions of claim 14 further including the step of limiting the operation of the automobile in response to a determined defective operating condition.	Lyft explains that "In the event of a detected failure, the system can automatically disengage and simultaneously inform our operators to resume full manual control of the vehicle."[4] Each self-driving vehicle necessarily includes some form of apparatus for automatically disengaging the autonomous driving mode, and such disengagement is a limitation on the operation of the vehicle (the autonomous driving mode is no longer engaged).

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Claim 19	Infringement by Lyft Self-Driving Vehicles
A computer program having code recorded on a computer readable medium for continuously monitoring and correcting operational conditions in an automobile comprising: means in said automobile continuously sensing each of a plurality of operational parameters of said automobile; means in said automobile for transmitting said continuously sensed parameters to a diagnostic station remote from said automobile; means in said diagnostic station for analyzing said parameters in order to determine defective operational conditions in said automobile; and means associated with said diagnostic station for wireless transmission of data relative to said determined defective operating conditions back to said automobile.	See claim 10.

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Claims 20–27	Infringement by Lyft Self-Driving Vehicles
	See claims 11–18

’871 Reference Materials

[1] “Take a peek inside Lyft’s lab where 400 engineers are working on self-driving cars” article, available at https://www.cnbc.com/2019/11/05/lyft-is-developing-self-driving-cars-at-its-level-5-lab-in-palo-alto.html

[2] Lyft Self-Driving webpage, available at https://self-driving.lyft.com/level5/

[3] Amazon case study for Lyft Level 5 data processing, available at https://aws.amazon.com/solutions/case-studies/Lyft-level-5-spot/

[4] Lyft 2020 Self-Driving Safety Report, available at https://self-driving.lyft.com/wp-content/uploads/2020/06/Safety_Report_2020.pdf

[5] Lyft’s 2019 S-1 Statement, available at https://www.sec.gov/Archives/edgar/data/1759509/000119312519059849/d633517ds1.htm

[6] Lyft Level 5 Data webpage, available at https://self-driving.lyft.com/level5/data/

[7] Lyft Level 5 Perception webpage, available at https://self-driving.lyft.com/level5/perception/

[8] “Virtual Validation: A Scalable Solution to Test & Navigate the Autonomous Road Ahead” article, available at https://medium.com/lyftself-driving/virtual-validation-a-scalable-solution-to-test-navigate-the-autonomous-road-ahead-e1a7d1fe1538

[9] “Lyft’s Approach to Autonomous Vehicle Safety” article, available at https://medium.com/lyftself-driving/lyfts-approach-to-autonomous-vehicle-safety-fc771ed25786

Overview of Patent

U.S. Patent No. 6,446,004	
Title	System and method for implementing proximity or location driven activities
Issue Date	September 3, 2002
Priority Date	February 28, 2001
Expiration Date	February 28, 2021
Abstract	A system and associated method that allow particular requests to be executed at some point in the future without specifying the exact time or necessarily a precise location. The execution time of the request is linked to the arrival of a person or object at, or near a geographic destination location. When a person, an object, or a group of persons or objects, arrives at the destination location, or comes close to it, the request to interact will be executed. The proximity threshold can be adjustable or programmable

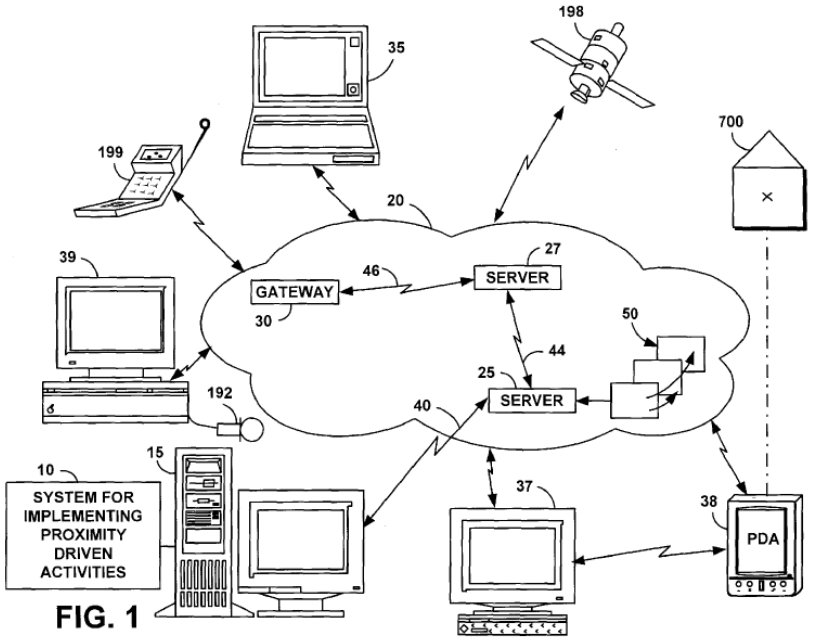


FIG. 1

U.S. Patent No. 6,446,004

Claim 1	Infringement by Lyft Bikes and Scooters
A method of implementing a proximity driven activity, comprising specifying an activity to be executed at an indeterminate destination location; storing an executable software code corresponding to the activity; determining a current location of a mobile computing device; determining whether the destination location is within a predefined proximity range from the current location of the mobile computing device; executing the executable software code at a time when the destination location is within the proximity range of the mobile computing device; and transmitting an address of the destination location to the mobile computing device.	Through its offered services, Lyft practices numerous proximity driven activities, including offering shared rentals of dockless electric bikes and scooters via its Lyft platform. [1] Lyft deploys an integrated process by which it informs customers of available bikes and scooters based at least in part on proximity of the customer to the bikes and scooters. The Lyft platform works in cooperation with Lyft's other technology and service offerings. For example, Lyft uses the same app (the Rider app) to administer and coordinate both the pick-up and drop-off of passengers for its rideshare services as it does for bike and scooter rentals. [2], [4] This app is referred to as the "Lyft app" or "Rider app" herein. Discovery will reveal the precise architecture of Lyft's platforms. For simplicity, Lyft's platforms will collectively be referred to herein as the "Lyft platform" with the understanding that this may encompass multiple infrastructure, business, and/or product layers used by Lyft to implement its services. The electric bikes and scooters may be collectively referred to as "shared electric vehicles" or "rental vehicles" unless differentiation between the two is required. Lyft acquired Motivate International Inc. ("Motivate") in 2018. Motivate operates various brands such as "Divvy" in Chicago and "Capital Bikeshare" in Washington D.C., among others.[1], [3] These bikes are available to rent via the Lyft app. For example, via the Lyft Rider app, a user in Chicago can rent or reserve a Divvy-branded electric bike.

U.S. Patent No. 6,446,004

Claim 1	Infringement by Lyft Bikes and Scooters
A method of implementing a proximity driven activity, comprising specifying an activity to be executed at an indeterminate destination location; storing an executable software code corresponding to the activity; determining a current location of a mobile computing device; determining whether the destination location is within a predefined proximity range from the current location of the mobile computing device; executing the executable software code at a time when the destination location is within the proximity range of the mobile computing device; and transmitting an address of the destination location to the mobile computing device.	Lyft coordinates shared electric vehicle rental activities that are each executed at destination locations that are initially indeterminate. On information and belief, the Lyft Rider app specifies an activity to be executed at an indeterminate location. A customer wishing to locate a shared electric vehicle to access and unlock for use (the proximity driven activity) opens the Rider app in order to be presented with rental vehicle options that are available nearby. However, the destination location where the customer will ultimately go to access the rental vehicle is initially indeterminate to the customer, as the customer does not select the location of a specific rental vehicle at this point.

U.S. Patent No. 6,446,004

Claim 1

A method of implementing a proximity driven activity, comprising

specifying an activity to be executed at an indeterminate destination location;

storing an executable software code corresponding to the activity;

determining a current location of a mobile computing device;

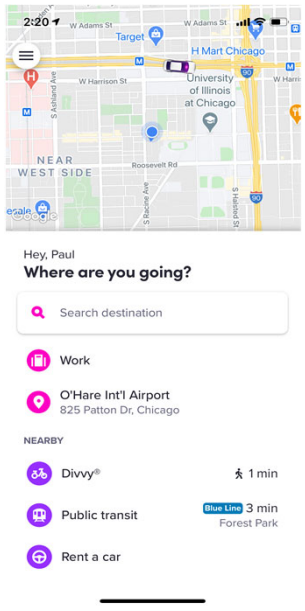
determining whether the destination location is within a predefined proximity range from the current location of the mobile computing device;

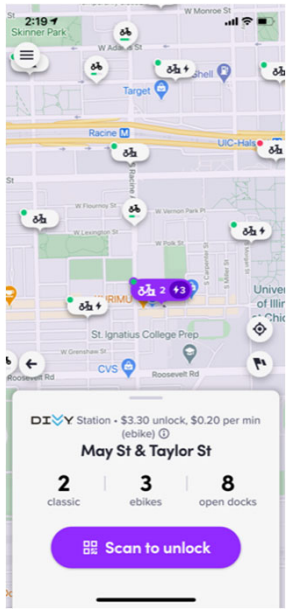
executing the executable software code at a time when the destination location is within the proximity range of the mobile computing device; and

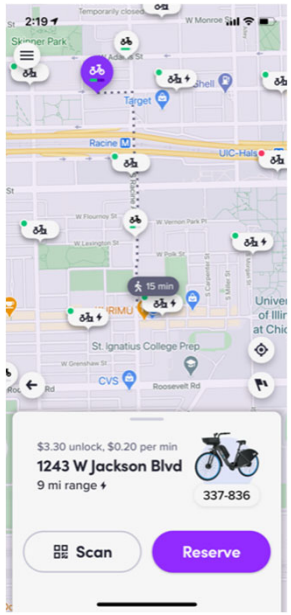
transmitting an address of the destination location to the mobile computing device.

Infringement by Lyft Bikes and Scooters

An illustration of the start of the rental process for a bike is shown below. In the first image, the Lyft Rider app presents the user with an option to select "Divvy" to find bikes near the user in the Chicago market available to be accessed/unlocked (to specify an activity to be executed at an indeterminate destination location). Once selected, as shown in the second image, the Rider app displays icons to indicate approximate locations of numerous rental vehicles that are available to rent nearby. When the customer selects (i.e., taps on) a rental bike, the Rider app displays an address (e.g., "1243 W. Jackson Blvd"), as shown in the third image on the right.[4]







U.S. Patent No. 6,446,004

Claim 1

A method of implementing a proximity driven activity, comprising

specifying an activity to be executed at an indeterminate destination location;

storing an executable software code corresponding to the activity;

determining a current location of a mobile computing device;

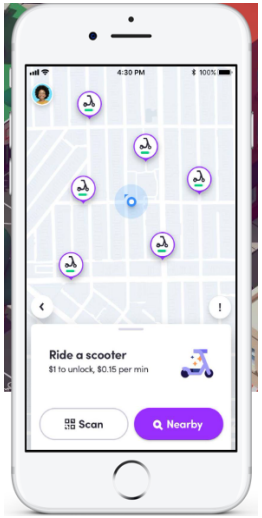
determining whether the destination location is within a predefined proximity range from the current location of the mobile computing device;

executing the executable software code at a time when the destination location is within the proximity range of the mobile computing device; and

transmitting an address of the destination location to the mobile computing device.

Infringement by Lyft Bikes and Scooters

An illustration of the start of the rental process for a scooter is shown below.[5] On information and belief, on an initial screen of the Lyft Rider app, the user is presented with options to select a rideshare, bike (e.g., Divvy), or a scooter. By selecting the scooter option, the user uses the Rider app to specify an activity of accessing/unlocking a scooter at an indeterminate destination location presently unknown to the user. Once the scooter option is selected, as shown in the first image, the Rider app displays icons to indicate approximate locations of numerous scooters that are available to rent nearby.



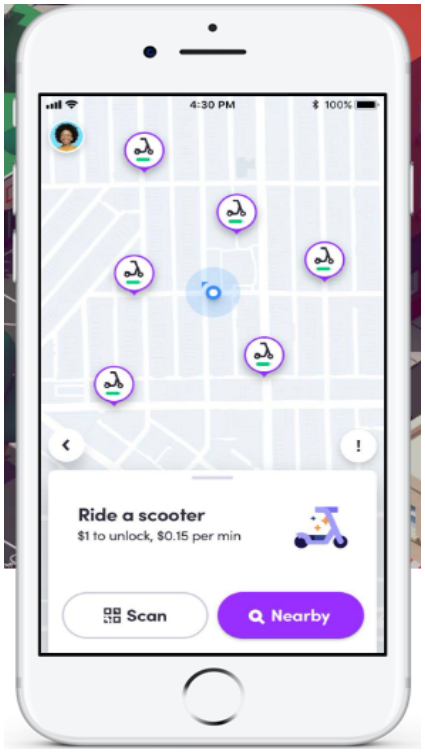
U.S. Patent No. 6,446,004

Claim 1	Infringement by Lyft Bikes and Scooters
A method of implementing a proximity driven activity, comprising specifying an activity to be executed at an indeterminate destination location; storing an executable software code corresponding to the activity; determining a current location of a mobile computing device; determining whether the destination location is within a predefined proximity range from the current location of the mobile computing device; executing the executable software code at a time when the destination location is within the proximity range of the mobile computing device; and transmitting an address of the destination location to the mobile computing device.	Lyft implements its electric bike and scooter rental services through the Lyft platform. Through the Lyft platform, Lyft offers App interfaces (the Lyft Rider app) for customers to locate, reserve, and rent bikes and scooters.[5], [6] Lyft has strategically designed its systems with software code to implement logic that quickly and efficiently locates and tracks its customers and rental vehicles for both presenting available vehicles to users and tracking the location of vehicles while rented by a customer. [2] Upon information and belief, servers of the Lyft platform store executable software code that enable it to receive and process requests placed by users using the Lyft Rider app and to provide requesting customers information regarding locally available rental vehicles, among other things.

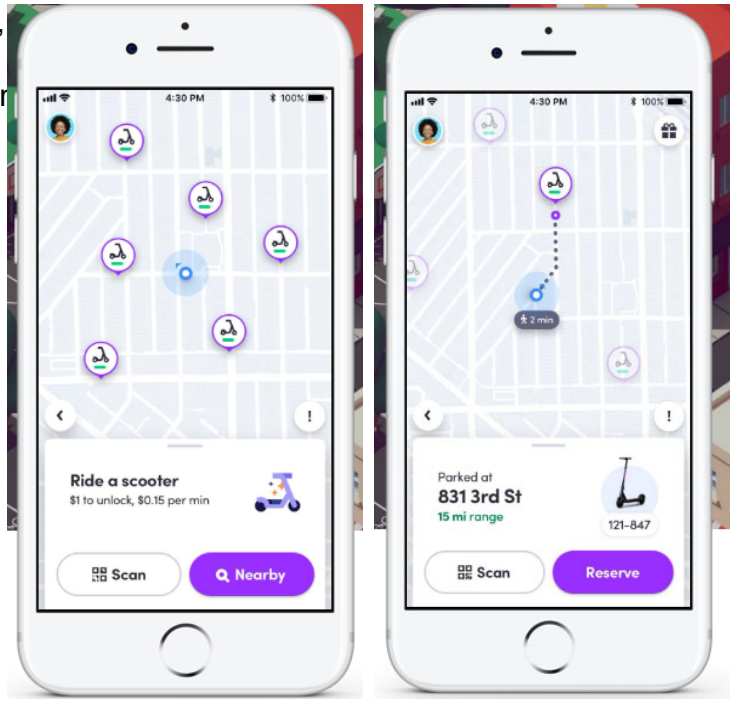
U.S. Patent No. 6,446,004

Claim 1	Infringement by Lyft Bikes and Scooters
A method of implementing a proximity driven activity, comprising specifying an activity to be executed at an indeterminate destination location; storing an executable software code corresponding to the activity; determining a current location of a mobile computing device; determining whether the destination location is within a predefined proximity range from the current location of the mobile computing device; executing the executable software code at a time when the destination location is within the proximity range of the mobile computing device; and transmitting an address of the destination location to the mobile computing device.	Customers are matched to nearby bikes and scooters that are not yet reserved or in use by another customer. To perform this matching, the Rider app tracks the precise location of its customers' mobile devices using GPS or other sensor data generated by the mobile device.[2] In this manner, the Rider app determines a current location of a mobile computing device. The following disclosure from Lyft's Terms of Services relates to all users of Lyft's Rider app, including both rideshare customers and rental customers[2]: **"B. Information We Collect When You Use the Lyft Platform** **Location Information.** Great rides start with an easy and accurate pickup. The Lyft Platform collects location information (including GPS and WiFi data) differently depending on your Lyft app settings and device permissions as well as whether you are using the platform as a Rider or Driver: • Riders: We collect your device's precise location when you open and use the Lyft app, including while the app is running in the background from the time you request a ride until it ends. Lyft also tracks the precise location of scooters and e-bikes at all times."

U.S. Patent No. 6,446,004

Claim 1	Infringement by Lyft Bikes and Scooters
A method of implementing a proximity driven activity, comprising specifying an activity to be executed at an indeterminate destination location; storing an executable software code corresponding to the activity; determining a current location of a mobile computing device; determining whether the destination location is within a predefined proximity range from the current location of the mobile computing device; executing the executable software code at a time when the destination location is within the proximity range of the mobile computing device; and transmitting an address of the destination location to the mobile computing device.	A Lyft server uses the location data collected from a customer's mobile device to determine whether the customer is currently near the location of an available rental device such as a scooter or electric bike, i.e., within a predefined proximity range of the destination location. For example, when a customer uses the Lyft app and selects the scooter option, as shown in the image to the right, the current location of the user with his/her mobile computing device is represented by the blue dot and the purple scooter icons show potential destination locations that are within a predefined proximity range from the customer's current location. [5] The customer is presented with an option to search "Nearby" for available scooters to determine which scooters (at destination locations) are within the predefined proximity range shown in the Lyft Rider app. 

U.S. Patent No. 6,446,004

Claim 1	Infringement by Lyft Bikes and Scooters
A method of implementing a proximity driven activity, comprising specifying an activity to be executed at an indeterminate destination location; storing an executable software code corresponding to the activity; determining a current location of a mobile computing device; determining whether the destination location is within a predefined proximity range from the current location of the mobile computing device; executing the executable software code at a time when the destination location is within the proximity range of the mobile computing device; and transmitting an address of the destination location to the mobile computing device.	On information and belief, when a customer inputs a request for available rental vehicles offered to it by Lyft in the Lyft Rider app (e.g., by selecting the "bike" or "scooter" option in locations where the scooters are available for rental), a server executes the executable software code corresponding to the request. This includes executing code to perform functions related to permitting a customer to view nearby rental vehicles and to select an available rental vehicle. On information and belief, a similar procedure is employed for electric bike rentals. 

U.S. Patent No. 6,446,004

Claim 1

A method of implementing a proximity driven activity, comprising

specifying an activity to be executed at an indeterminate destination location;

storing an executable software code corresponding to the activity;

determining a current location of a mobile computing device;

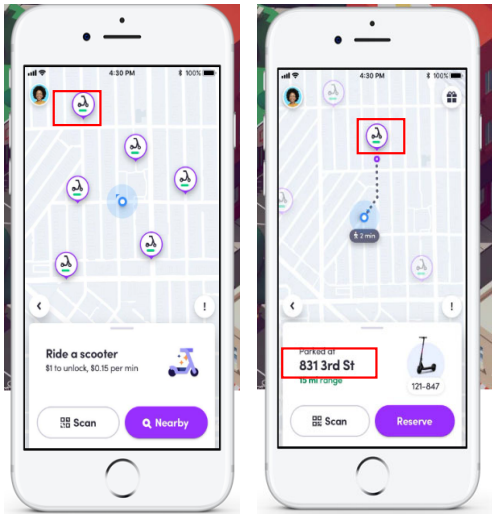
determining whether the destination location is within a predefined proximity range from the current location of the mobile computing device;

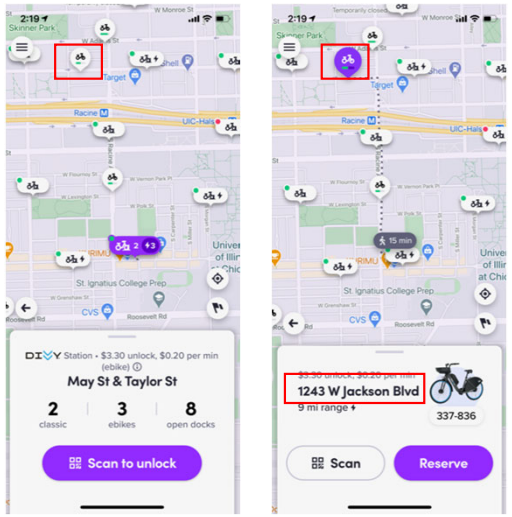
executing the executable software code at a time when the destination location is within the proximity range of the mobile computing device; and

transmitting an address of the destination location to the mobile computing device.

Infringement by Lyft Bikes and Scooters

After a customer selects one of the available rental vehicles available via the Lyft Rider app, a Lyft server transmits the address of where the rental vehicle is located to the customer's mobile computing device via the app. The server provides a specific address, which upon information and belief, is determined based upon Lyft's tracking of the rental vehicle's GPS coordinates as previously explained.[2] This portion of the process is illustrated below for both scooters (left) and bikes (right):





U.S. Patent No. 6,446,004

Claim 2	Infringement by Lyft Bikes and Scooters
The method according to claim 1, further including transmitting the current location of the mobile computing device to an event proximity server.	As discussed in claim 1, the Rider App determines the current location of the customer's mobile computing device. On information and belief, this data is transmitted from the customers' mobile devices to a Lyft server when the customer has granted such permission. On information and belief, the server is an event proximity server. The following disclosure from Lyft's Terms of Services relates to all users of Lyft's App, including rental customers. [2] Discovery will confirm the precise architecture of Lyft's platforms.

U.S. Patent No. 6,446,004

Claim 3	Infringement by Lyft Bikes and Scooters
The method according to claim 2, wherein transmitting the current location includes transmitting over a network.	As discussed in claim 2, on information and belief, customers' locations are transmitted to a Lyft server. On information and belief, Lyft servers transmits GPS data per trip from the rental customer's mobile device to an event proximity server and through its own network, which also necessarily occurs over the Internet. [2]
Claim 4	
The method according to claim 3, wherein transmitting over the network includes transmitting over the internet.	

U.S. Patent No. 6,446,004

Claim 5	Infringement by Lyft Bikes and Scooters
The method according to claim 2, further including downloading a software code from the server to the mobile computing device.	As discussed in claims 1 and 2, rental customers use the Lyft Rider app to find and rent the rental devices, among other things. On information and belief, the Lyft Rider app downloads software code from the event proximity server when a customer opens the Lyft app to find a rental device and when a customer completes a rental. On information and belief, such software code is downloaded from an event proximity server of the Lyft platform to each customer's mobile computing device to enable the functionality required to perform the functions associated with locating and renting rental vehicles. Discovery will confirm the precise architecture and software code utilized to implement rentals through the Lyft platform.
Claim 6	
The method according to claim 5, further including executing the software code on the mobile computing device.	

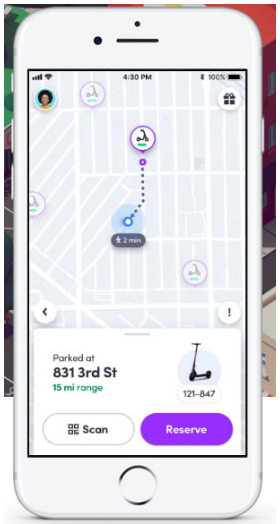
U.S. Patent No. 6,446,004

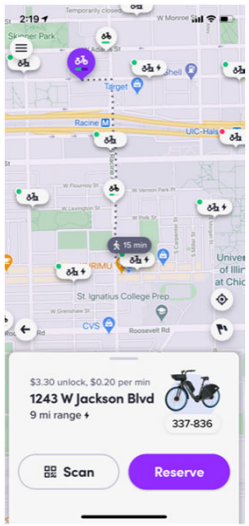
Claim 8

The method according to claim 7, wherein the step of executing includes executing an anti-hysteresis software code to prevent duplication of the activity.

Infringement by Lyft Bikes and Scooters

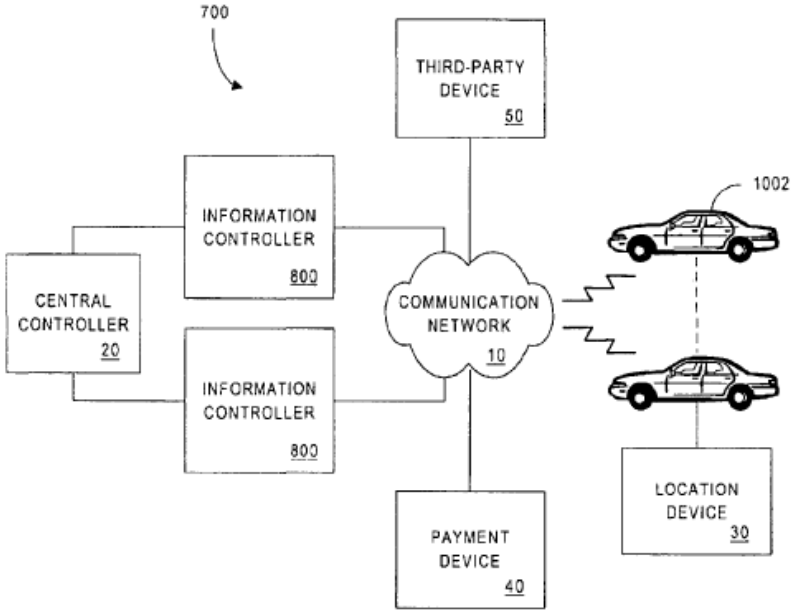
Lyft has strategically designed its systems with software code to implement logic that quickly and efficiently locates and allows reservation of rental vehicles. On information and belief, Lyft servers execute the software code by executing an anti-hysteresis software code to prevent the duplication of the activity, i.e., to ensure only one rental customer may reserve or rent a given bike or scooter at a time. For example, the Lyft rider app provides the option for a customer to "Reserve a scooter [or bike] ahead of time" and unlock the scooter or bike when the user arrives, thus prohibiting any other users from unlocking and/or using that reserved scooter.[4], [5]





Overview of Patent

U.S. Patent No. 6,807,464	
Title	Systems and methods for distributing information to an operator of a vehicle
Issue Date	October 19, 2004
Priority Date	January 2, 2002
Expiration Date	February 20, 2022
Abstract	Systems and methods are provided to facilitate a distribution of information. According to one embodiment, vehicle control information is determined, the vehicle control information being dependent on time in formation, operator information, and/or vehicle information. For example, an intersection control signal may be determined. The vehicle control information is then transmitted to an automobile device, which in turn arranges for the vehicle control information to be provided to an operator. For example, a graphical representation of an intersection control signal may be displayed on an automobile's windshield



U.S. Patent No. 6,807,464

Claim 1	Infringement by Lyft Bikes and Scooters
A method of distributing vehicle control information, comprising: determining at a controller located at a location vehicle control information associated with the location and with an operator of a vehicle; transmitting the vehicle control information to a vehicle device; receiving the vehicle control information at the vehicle device; and arranging at the vehicle device for an indication to be provided to the operator in accordance with the vehicle control information.	In connection with the electric bike and scooter rental services offered via its Lyft platform, Lyft distributes numerous types of vehicle control information. Through the Lyft platform, Lyft offers vehicle rental services to its customers from a network of dockless electric bikes and scooters. Because they are dockless, these bikes and scooters are spread out among the cities in which they are available. Lyft deploys an integrated process by which it tracks both customers and rental vehicles. As part of that process, Lyft distributes information to its customers, such as the location from which a customer can pick up an available rental vehicle. Lyft also distributes to customers restrictions implemented in accordance with city regulations, such as designated service areas for operating and/or parking the rental vehicles. The Lyft platform works in cooperation with Lyft's other technology and service offerings. For example, Lyft uses the same Rider app to administer and coordinate both the pick-up and drop-off of passengers for its rideshare services as it does for bike and scooter rentals. [2] This app is referred to as the "Lyft app" herein. Discovery will reveal the precise architecture of Lyft's platforms. For simplicity, Lyft's platforms will collectively be referred to herein as the "Lyft platform" with the understanding that this may encompass multiple infrastructure, business, and/or product layers used by Lyft to implement its services. The electric bikes and scooters may be collectively referred to as "shared electric vehicles" or "rental vehicles" unless differentiation between the two is required. Lyft acquired Motivate International Inc. ("Motivate") in 2018. Motivate operates various brands such as "Divvy" in Chicago and "Capital Bikeshare" in Washington D.C., among others.[1], [3] These bikes are available to rent via the Lyft app. For example, via the Lyft Rider app, a user in Chicago can rent or reserve a Divvy-branded electric bike.

U.S. Patent No. 6,807,464

Claim 1	Infringement by Lyft Bikes and Scooters
A method of distributing vehicle control information, comprising: determining at a controller located at a location vehicle control information associated with the location and with an operator of a vehicle; transmitting the vehicle control information to a vehicle device; receiving the vehicle control information at the vehicle device; and arranging at the vehicle device for an indication to be provided to the operator in accordance with the vehicle control information.	Through its platform, Lyft offers an app interface (the Lyft Rider app) for customers to locate, reserve, and rent bikes and scooters. Upon information and belief, at least some of the shared electric vehicles, such as the electric bicycles and scooters, are equipped with controllers for determining a location thereof.[2], [7] For those models, the controller is on board the vehicle and located at the location of the vehicle. Vehicle control information may relate to, for example, a location of a rental vehicle, or service areas and designated parking zones where the rental vehicles must be parked (or for bikes, a penalty charge may be incurred).[7], [8] For example, on information and belief, Lyft only allows scooters to be rented and parked within a service area designated in the Lyft app.[8] Although users may ride outside of the designated service area, they must return in order to park the scooter and end the ride. Lyft tracks the location of each of its rental vehicles and tracks the identity of the customers that rent each such vehicle. [2] In this manner, the controller of the rental vehicle, which is located at a location (the location of the rental vehicle), determines vehicle control information associated with the location (the rental vehicle's location at any given time during a rental with respect to the service area). That location is also associated with the operator of a vehicle when the user selects the rental vehicle, and during the rental thereafter.

U.S. Patent No. 6,807,464

Claim 1

A method of distributing vehicle control information, comprising:

determining at a controller located at a location vehicle control information associated with the location and with an operator of a vehicle;

transmitting the vehicle control information to a vehicle device;

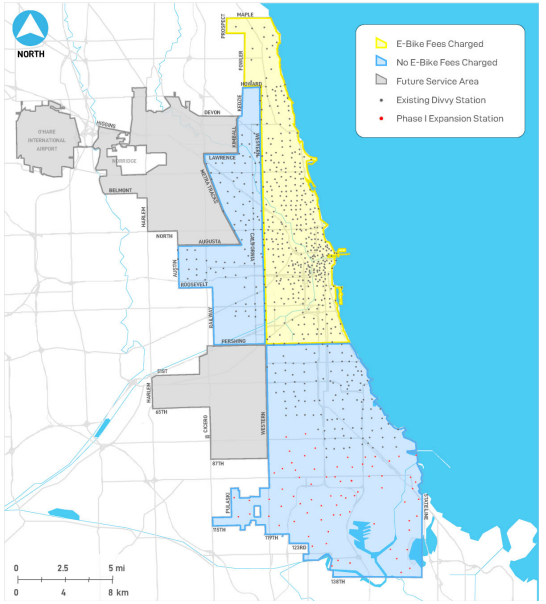
receiving the vehicle control information at the vehicle device; and

arranging at the vehicle device for an indication to be provided to the operator in accordance with the vehicle control information.

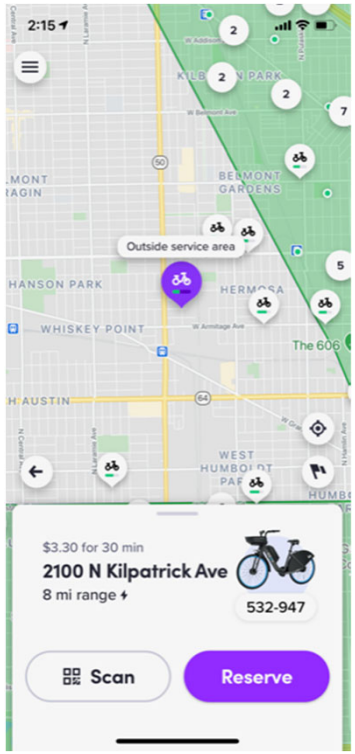
Infringement by Lyft Bikes and Scooters

The customer accesses the Lyft Rider app to locate, reserve, and rent the shared electric vehicles. On information and belief, while the customer is riding the vehicle, the controller transmits vehicle control information, such as a location indicating that the vehicle is riding outside of the designated service area, to the customer's mobile device (a vehicle device) via the Rider app. The '464 patent teaches that the vehicle device may be a mobile phone. (Col. 8, ll. 36-44.) It also indicates that the controller may communicate with a central controller that coordinates distribution of the vehicle control information to multiple controllers. (Col. 8, ll. 45-49.)

In one example, for Divvy-branded electric bikes located in Chicago, the customer incurs an extra $25 fee if the electric bike is parked outside of the designated service area (shown in the screenshot reproduced below).[10], [11] On information and belief, this information (the location of the vehicle being outside of the service area) is transmitted to a vehicle device (the customer's mobile device for renting the vehicle).



U.S. Patent No. 6,807,464

Claim 1	Infringement by Lyft Bikes and Scooters
A method of distributing vehicle control information, comprising: determining at a controller located at a location vehicle control information associated with the location and with an operator of a vehicle; transmitting the vehicle control information to a vehicle device; receiving the vehicle control information at the vehicle device; and arranging at the vehicle device for an indication to be provided to the operator in accordance with the vehicle control information.	The vehicle control information, such as the location of the rental vehicle with respect to the designated service area boundary, is received by the customer's mobile device via the Rider app. Customers can view the vehicle control information on their devices via the Rider app as illustrated by the screenshot to the right, which is regularly updated according to the vehicle's current location during a rental. As an example, the screenshot shows a portion of the service area (highlighted in green) and shows an electric bike parked outside of the designated service area illustrating that the customer's device has received the vehicle control information (e.g., the service area boundaries).[4] 

U.S. Patent No. 6,807,464

Claim 1

A method of distributing vehicle control information, comprising:

determining at a controller located at a location vehicle control information associated with the location and with an operator of a vehicle;

transmitting the vehicle control information to a vehicle device;

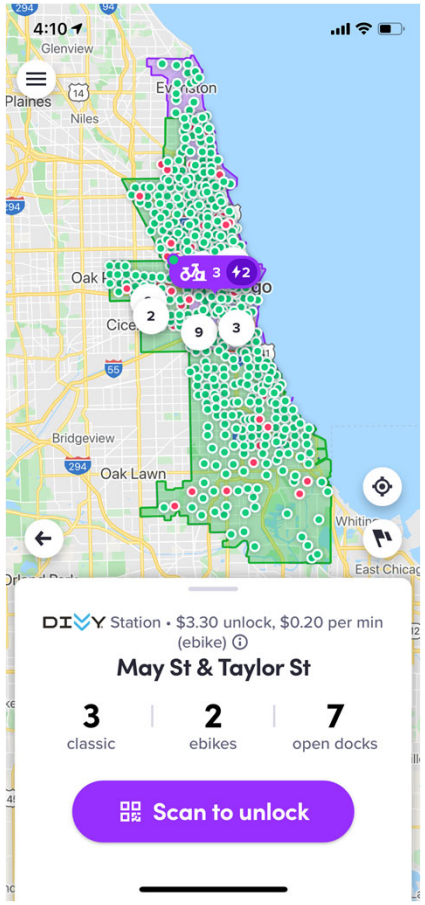
receiving the vehicle control information at the vehicle device; and

arranging at the vehicle device for an indication to be provided to the operator in accordance with the vehicle control information.

Infringement by Lyft Bikes and Scooters

On information and belief, the Rider app provides indications to the customer in accordance with vehicle control information, such as the location and boundary of the designated service area as shown in the image to the right.[4]

In addition, on information and belief, the Rider app notifies the user if the rental vehicle has travelled beyond the boundaries of the service area (an indication) via the customer's mobile device either during a ride or when the user attempts to park the vehicle when the ride is finished (e.g., a notification may be provided to a user that a scooter cannot be parked outside of the service area, or that a bike may be parked, but an additional penalty fee may apply).



U.S. Patent No. 6,807,464

Claim 2	Infringement by Lyft Bikes and Scooters
The method of claim 1, wherein the vehicle control information is further associated with at least one of: (i) an intersection control signal, (ii) a speed limit, (iii) a merge indication, (iv) a parking regulation, (v) a direction of travel, (vi) location information, (vii) an allowable vehicle action, and (viii) a prohibited vehicle action.	As discussed in claim 1, the vehicle control information may relate to, for example, a service area in which rental vehicles must be parked (a parking regulation) or no parking zones outside of that area (a prohibited vehicle action). On information and belief, the vehicle control information may also be associated with low-speed zones (a speed limit) or no scooter zones (another prohibited vehicle action).[11]

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Claim 5	Infringement by Lyft Bikes and Scooters
The method of claim 1, wherein the indication is provided to the operator in accordance with at least one of: (i) an operator preference, (ii) an indication type, (iii) a display location, (iv) an indication duration, and (v) a threshold level.	As discussed in claim 1, the Rider app provides indications to the customer in accordance with vehicle control information, such as the location and extent of a particular service area, e.g., a no-parking zone. It is believed that the customer receives push notifications in the event the rental vehicle has travelled outside of the service area, and on information and belief, a customer can set notification preferences in the Lyft Rider app including to receive push notifications or text message notifications (operator preference).[12] In addition, the indication is believed to be provided in accordance with an indication duration (e.g., the notification may be displayed for a predetermined time as set by Lyft, which may be indefinitely until the customer dismisses the notification).

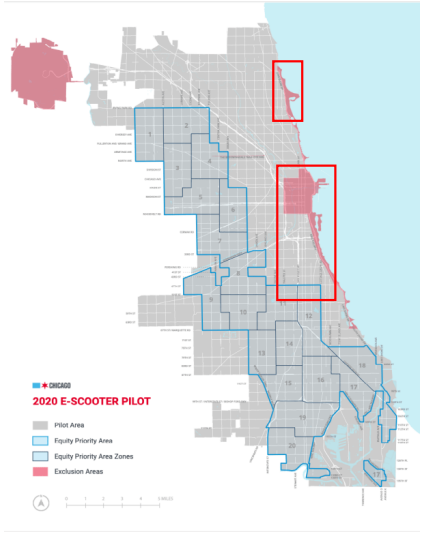
U.S. Patent No. 6,807,464

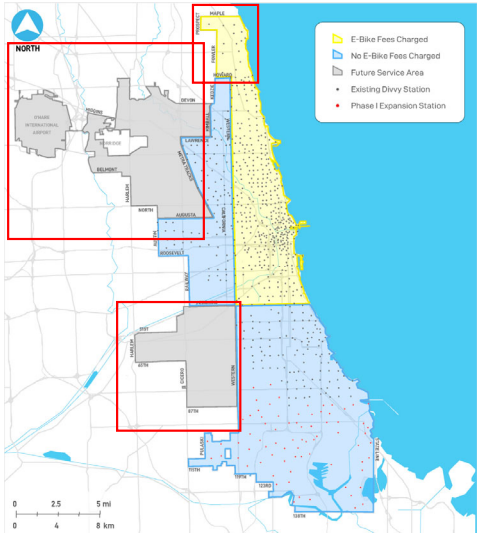
Claim 6

The method of claim 1, wherein the vehicle control information is further associated with at least one of: (i) a vehicle identifier, (ii) a vehicle category, (iii) a vehicle weight, (iv) a vehicle height, and (v) item information associated with the vehicle.

Infringement by Lyft Bikes and Scooters

On information and belief, the Lyft platform associates, among other things, the type of rental vehicle a customer is using, e.g., electric bike versus scooter (a vehicle category), with vehicle control information. For instance, on information and belief, service areas and prohibited parking zones may vary between bikes and scooters based at least in part on location-specific (e.g., city-wide) regulations regarding operation of scooters and electric bikes.[7], [11] As one example, a comparison between a map of the 2020 scooter service area in Chicago based on city regulations (left) has different excluded parking areas and allowed service areas than the Divvy bike map (right).





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Claim 7	Infringement by Lyft Bikes and Scooters
The method of claim 1, wherein said transmitting is performed at least one of: (i) periodically, (ii) when communication with the vehicle device is possible, (iii) based on a location of the vehicle device, and (iv) upon a change in vehicle control information.	As discussed in claim 1, while the customer is riding the rental vehicle, the controller transmits vehicle control information, such as the location of the vehicle with respect to the designated service area, to the customer's mobile device (a vehicle device) via the Rider app.[2] This is necessarily associated with at least a location of the vehicle device.
Claim 15	
The method of claim 1, further comprising: transmitting location information associated with the vehicle control information.	
Claim 16	
The method of claim 1, wherein said transmitting is performed via at least one of: (i) a wireless communication device, (ii) a Bluetooth device, (iii) an Internet device, (iv) a telephone device, (v) a vehicle device, (vi) a portable computing device, (vii) a personal digital assistant, and (viii) a pager.	

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Claim 17	Infringement by Lyft Bikes and Scooters
The method of claim 1, further comprising: storing the vehicle control information.	See discussion of claim 1. Discovery will confirm that the vehicle control information with respect to claim 1 (location of the rental vehicle with respect to the service area) is stored by Lyft servers for subsequent analysis to improve various aspects of the Lyft platform. Furthermore, a customer's trip history is stored within the Rider App, further supporting that Lyft servers store vehicle control information. For instance, as Lyft explains: "Beyond facilitating our ridesharing marketplace, we also utilize data-driven insights to improve our network of shared bikes and scooters. For our Lyft Scooters offering, we use data science and real-time analytics to understand and predict rider behavior and scooter movement. This informs our on-the-ground operations teams. Our platform technology helps us pinpoint optimal scooter distribution and rebalancing, which helps reduce operational costs, maximize scooter availability and improve riders' experience."[1]

U.S. Patent No. 6,807,464

Claim 20	Infringement by Lyft Bikes and Scooters
A system, comprising: a controller located at a location, wherein the controller is adapted to (i) determine vehicle control information associated with the location and with an operator of a vehicle and (ii) transmit the vehicle control information; and; a vehicle device adapted to (i) receive the vehicle control information and (ii) arrange for an indication to be provided to the operator in accordance with the vehicle control information.	Through the Lyft platform, Lyft offers vehicle rental services to its customers from a network of dockless electric bikes and scooters. Because they are dockless, these bikes and scooters are spread out among the cities in which they are available. Lyft deploys an integrated process by which it tracks both customers and rental vehicles. As part of that process, Lyft distributes information to its customers, such as the location from which a customer can pick up an available rental vehicle. Lyft also distributes to customers restrictions implemented in accordance with city regulations, such as designated service areas for operating and/or parking the rental vehicles. The Lyft platform works in cooperation with Lyft's other technology and service offerings. For example, Lyft uses the same Rider app to administer and coordinate both the pick-up and drop-off of passengers for its rideshare services as it does for bike and scooter rentals. [2] This app is referred to as the "Lyft app" or "Lyft Rider app" herein. Discovery will reveal the precise architecture of Lyft's platforms. For simplicity, Lyft's platforms will collectively be referred to herein as the "Lyft platform" with the understanding that this may encompass multiple infrastructure, business, and/or product layers used by Lyft to implement its services. The electric bikes and scooters may be collectively referred to as "shared electric vehicles" or "rental vehicles" unless differentiation between the two is required. Lyft acquired Motivate International Inc. ("Motivate") in 2018. Motivate operates various brands such as "Divvy" in Chicago and "Capital Bikeshare" in Washington D.C., among others.[1], [3] These bikes are available to rent via the Lyft app. For example, via the Lyft Rider app, a user in Chicago can rent or reserve a Divvy-branded electric bike..

U.S. Patent No. 6,807,464

Claim 20	Infringement by Lyft Bikes and Scooters
A system, comprising: a controller located at a location, wherein the controller is adapted to (i) determine vehicle control information associated with the location and with an operator of a vehicle and (ii) transmit the vehicle control information; and; a vehicle device adapted to (i) receive the vehicle control information and (ii) arrange for an indication to be provided to the operator in accordance with the vehicle control information.	Through its platform, Lyft offers a Rider app interface for customers to locate, reserve, and rent bikes and scooters. Upon information and belief, at least some of the shared rental vehicles, such the electric bikes and scooters, are equipped with controllers for determining a location thereof.[2], [7] For those models, the controller is on board the vehicle and located at the location of the vehicle. Vehicle control information may relate to, for example, service areas and designated parking zones where the rentals must be parked.[7], [8] For example, on information and belief, Lyft only allows scooters to be rented and parked within a service area designated in the Rider app.[8] Although users may ride outside of the designated service area, they must return in order to park the scooter and end the ride. Lyft also tracks the location of each of its rental vehicles and tracks the identity of the customers that rent each such vehicle. In this manner, the controller of the rental vehicle, which is located at a location (the location of the rental vehicle), is adapted to determine and transmit vehicle control information associated with the location (the rental vehicle's location at any given time during a rental with respect to the service area). That location is also associated with the operator of a vehicle when the user selects the rental vehicle, and during the rental thereafter.

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Claim 20

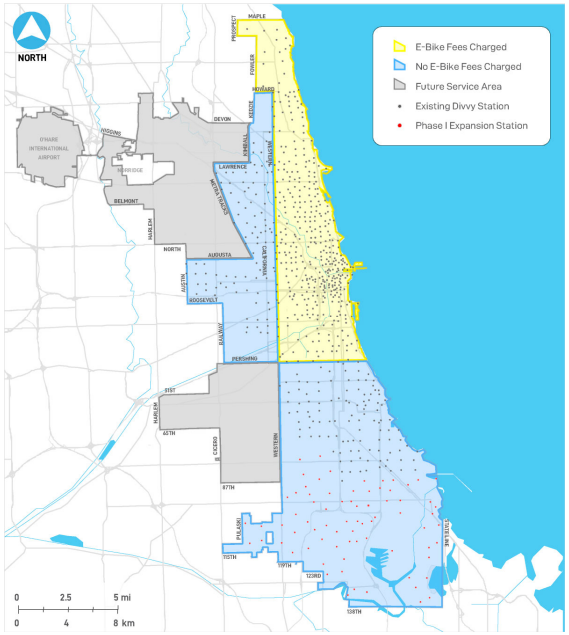
A system, comprising:

a controller located at a location, wherein the controller is adapted to (i) determine vehicle control information associated with the location and with an operator of a vehicle and (ii) transmit the vehicle control information; and;

a vehicle device adapted to (i) receive the vehicle control information and (ii) arrange for an indication to be provided to the operator in accordance with the vehicle control information.

Infringement by Lyft Bikes and Scooters

The customer accesses the Lyft Rider app to locate, reserve, and rent the shared electric vehicles. On information and belief, while the customer is riding the vehicle, the controller transmits vehicle control information, such as a location indicating that the vehicle is riding outside of the designated service area, to the customer's mobile device (a vehicle device) via the Rider app. The '464 patent teaches that the vehicle device may be a mobile phone. (Col. 8, ll. 36-44.) It also indicates that the controller may communicate with a central controller that coordinates distribution of the vehicle control information to multiple controllers. (Col. 8, ll. 45-49.)



In one example, for Divvy-branded electric bikes located in Chicago, the customer incurs an extra $25 fee if the electric bike is parked outside of the designated service area (shown in the screenshot reproduced below).[10], [11] On information and belief, this information (the location of the vehicle being outside of the service area) is transmitted to a vehicle device (the customer's mobile device for renting the vehicle).

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Claim 20

A system, comprising:

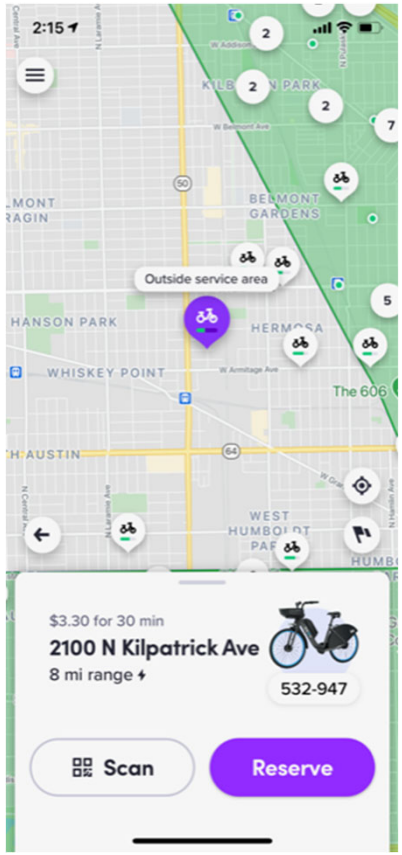
a controller located at a location, wherein the controller is adapted to (i) determine vehicle control information associated with the location and with an operator of a vehicle and (ii) transmit the vehicle control information; and;

a vehicle device adapted to (i) receive the vehicle control information and (ii) arrange for an indication to be provided to the operator in accordance with the vehicle control information.

Infringement by Lyft Bikes and Scooters

The vehicle control information, such as the location of the rental vehicle with respect to the designated service area boundary, is received by the customer's mobile device via the Rider app.

Customers can view the vehicle control information on their devices via the Rider app as illustrated by the screenshot to the right, which is regularly updated according to the vehicle's current location during a rental. As an example, the screenshot shows a portion of the service area (highlighted in green) and shows an electric bike parked outside of the designated service area illustrating that the customer's device has received the vehicle control information (e.g., the service area boundaries).[4]



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Claim 20

A system, comprising:

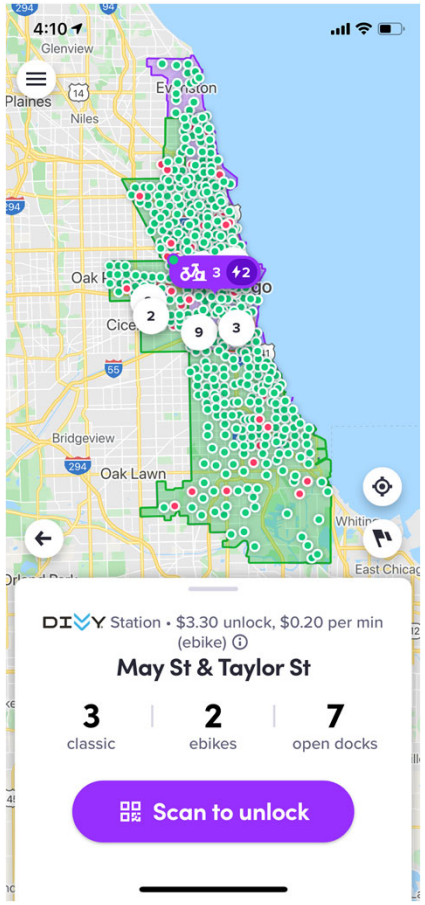
a controller located at a location, wherein the controller is adapted to (i) determine vehicle control information associated with the location and with an operator of a vehicle and (ii) transmit the vehicle control information; and;

a vehicle device adapted to (i) receive the vehicle control information and (ii) arrange for an indication to be provided to the operator in accordance with the vehicle control information.

Infringement by Lyft Bikes and Scooters

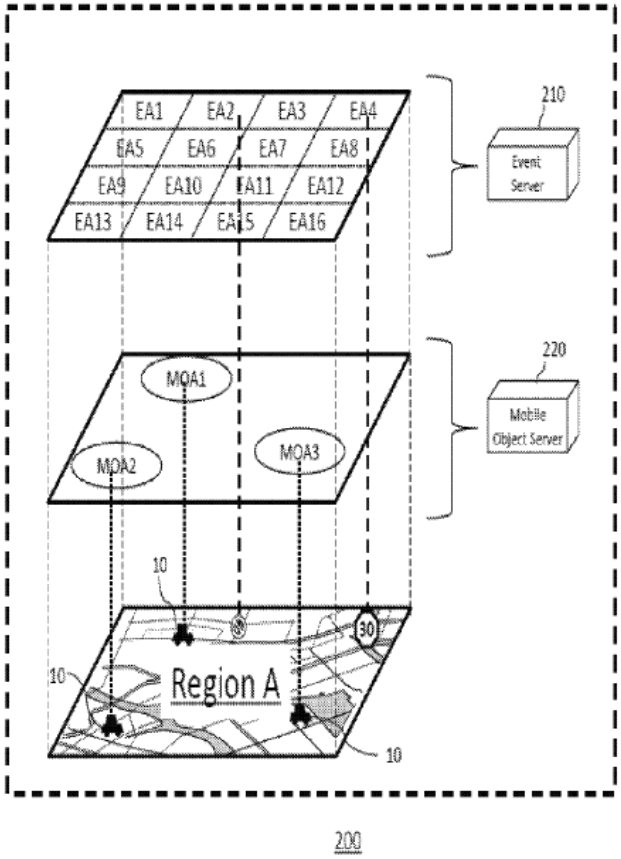
On information and belief, the Rider app provides indications to the customer in accordance with vehicle control information, such as the location and boundary of the designated service area as shown in the image to the right.[4]

In addition, on information and belief, the Rider app notifies the user if the rental vehicle has travelled beyond the boundaries of the service area (an indication) via the customer's mobile device either during a ride or when the user attempts to park the vehicle when the ride is finished (e.g., a notification may be provided to a user that a scooter cannot be parked outside of the service area, or that a bike may be parked, but an additional penalty fee may apply).



Overview of Patent

U.S. Patent No. 9,460,616	
Title	Management of mobile objects and service platform for mobile objects
Issue Date	October 4, 2016
Priority Date	December 16, 2015
Expiration Date	December 16, 2035
Abstract	To provide different services and information in real time to each automobile or each driver with a high-quality driving assistance or automatic driving system that manages a plurality of mobile objects by communicating with the mobile objects, provided is a system including a mobile object server operable to receive information from each of a plurality of mobile objects within a geographic space and perform a process associated with each mobile object; and a registration server operable to register a first additional process that is to be performed in addition to a first basic process common to the plurality of mobile objects, in association with one mobile object among the plurality of mobile objects. Also provided are a method and program product.



U.S. Patent No. 9,460,616

Claim 1	Infringement by Lyft Bikes and Scooters
A system comprising: a mobile object server operable to receive information from each of a plurality of mobile objects within a geographic space and perform a process associated with each mobile object; a registration server operable to register a first additional process that is to be performed in addition to a first basic process common to the plurality of mobile objects, in association with one mobile object among the plurality of mobile objects: wherein the mobile object server is operable to perform, as the first additional process, a process of providing notification that the one mobile object has become distanced from a predetermined location or region.	Through its Lyft platform, Lyft offers shared rentals of dockless electric bikes and scooters. The Lyft platform works in cooperation with Lyft's other technology and service offerings. For example, Lyft uses the same Rider app to administer and coordinate both the pick-up and drop-off of passengers for its Rideshare services as it does for bike and scooter rental. This app is referred to as the "Lyft App" or "Lyft Rider app" herein. Discovery will reveal the precise architecture of Lyft's platforms. For simplicity, Lyft's platforms will collectively be referred to herein as the "Lyft platform" with the understanding that this may encompass multiple infrastructure, business, and/or product layers used by Lyft to implement its services. The electric bikes and scooters may be collectively referred to as "shared electric vehicles" or "rental vehicles" unless differentiation between the two is required. Lyft acquired Motivate International Inc. ("Motivate") in 2018. Motivate operates various brands such as "Divvy" in Chicago and "Capital Bikeshare" in Washington D.C., among others.[1], [3] These bikes are available to rent via the Lyft app. For example, via the Lyft Rider app, a user in Chicago can rent or reserve a Divvy-branded electric bike.

U.S. Patent No. 9,460,616

Claim 1	Infringement by Lyft Bikes and Scooters
A system comprising: a mobile object server operable to receive information from each of a plurality of mobile objects within a geographic space and perform a process associated with each mobile object; a registration server operable to register a first additional process that is to be performed in addition to a first basic process common to the plurality of mobile objects, in association with one mobile object among the plurality of mobile objects: wherein the mobile object server is operable to perform, as the first additional process, a process of providing notification that the one mobile object has become distanced from a predetermined location or region.	Through the Lyft platform, Lyft offers App interfaces (the Lyft Rider app) for customers to locate, reserve, and rent bikes and scooters.[5], [6] When a customer opens the Rider app to find a rental device, servers of the Lyft platform identifies bikes and scooters that are nearby the customer but not yet reserved or in use by another customer. Lyft tracks at least the GPS location of its electric bikes and scooters.[2] Lyft also tracks the precise or approximate location of its customers' mobile devices (the mobile objects).[2] Lyft has strategically designed its systems with technology, including servers, that quickly and efficiently process and track rental requests and rental rides (a process associated with each mobile object). Upon information and belief, the Lyft platform uses a server (the mobile object server) to receive the information it tracks about its bikes and scooters and its rental customers' mobile devices in a given geographic region (the plurality of mobile objects within a geographic space) so their location may be displayed in the Lyft app. [2], [5], [6]

U.S. Patent No. 9,460,616

Claim 1	Infringement by Lyft Bikes and Scooters
A system comprising: a mobile object server operable to receive information from each of a plurality of mobile objects within a geographic space and perform a process associated with each mobile object; a registration server operable to register a first additional process that is to be performed in addition to a first basic process common to the plurality of mobile objects, in association with one mobile object among the plurality of mobile objects: wherein the mobile object server is operable to perform, as the first additional process, a process of providing notification that the one mobile object has become distanced from a predetermined location or region.	Lyft has strategically designed its systems with technology, including servers, that quickly and efficiently process and track rental requests and rental rides. Lyft tracks its bikes and scooters and its rental customers' mobile devices (a plurality of mobile objects) during each rental (a first basic process common to the plurality of mobile objects). Upon information and belief, the Lyft platform uses a server (the registration server) to register a first additional process that is performed in addition to the first basic process. In many if not all cities, Lyft implements geofencing in a designated service area and provides notifications (via a first additional process) to, for example, restrict its customers' use of the rental vehicles to designated areas or to prevent a customer from leaving a rental vehicle in a no parking zone.[7], [11]

U.S. Patent No. 9,460,616

Claim 1

A system comprising:

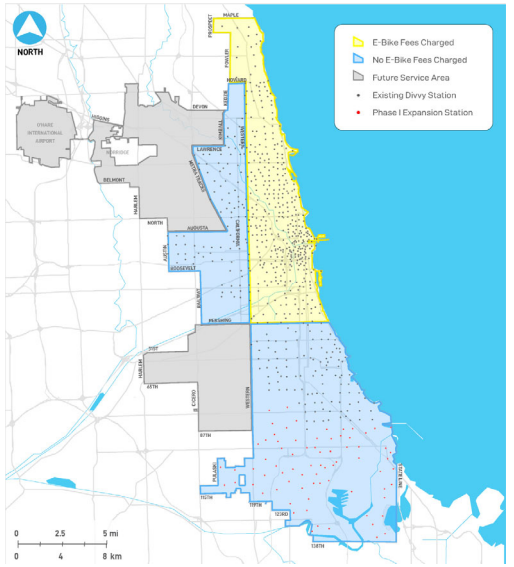
a mobile object server operable to receive information from each of a plurality of mobile objects within a geographic space and perform a process associated with each mobile object;

a registration server operable to register a first additional process that is to be performed in addition to a first basic process common to the plurality of mobile objects, in association with one mobile object among the plurality of mobile objects:

wherein the mobile object server is operable to perform, as the first additional process, a process of providing notification that the one mobile object has become distanced from a predetermined location or region.

Infringement by Lyft Bikes and Scooters

Upon information and belief, the Lyft platform uses a server (the mobile object server) to provide a notification that a mobile object has become distanced from a predetermined location or region. When the Lyft platform detects that a customer with a rental vehicle has exited (or is parking the vehicle outside) the designated service area, on information and belief, the Lyft app provides a notification to the rental vehicle customer. For example, Lyft's designated service area for Lyft bikes in Chicago (i.e., Divvy branded bikes) is shown below. [7] If the customer parks an electric bike outside of the service area, a $25 fee is incurred.



On information and belief, the determination of whether the vehicle is outside of the service area is based at least in part on the location of the customer's mobile communication device (the mobile object). In connection with this fee, it is believed that a notification is provided to the customer that the bike is being parked outside of the service area (a notification that the mobile object has become distanced from a predetermined region) and that a penalty fee will be assessed.

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Claim 11	Infringement by Lyft Bikes and Scooters
A method comprising: receiving information from each of a plurality of mobile objects within a geographic space; performing a process associated with each mobile object; and registering a first additional process that is to be performed in addition to a first basic process common to the plurality of mobile objects, in association with one mobile object among the plurality of mobile objects, wherein the mobile object is operable to perform, as the first additional process, a process of providing notification that the one mobile object has become distanced from a predetermined location or region.	See claim 1. In contrast with claim 1 which requires the mobile object server to provide the notification, claim 11 requires that "the mobile object is operable to perform . . . a process of providing notification that the one mobile object has become distanced from a predetermined location or region." As discussed with respect to claim 1, the Lyft platform uses a server (the mobile object server) to facilitate providing of a notification that a mobile object has become distanced from a predetermined location or region to a customer via the Lyft app. For example, on information and belief, a notification is provided when the Lyft platform detects that a customer with a rental vehicle has exited (or is parking the vehicle outside) the designated service area. Similarly, the mobile object (the customer's mobile communication device) is operable to perform a process of providing such a notification that the mobile object has become distanced from the predetermined location or region. Via the Lyft app, the user's mobile communication device is believed to provide (i.e., display) a notification when the user leaves the designated service area, or attempts to park a rental vehicle outside of the designated service area, which would indicate that the user's mobile communication device has become distanced from a predetermined region (the designated service area).

U.S. Patent No. 9,460,616

Claim 16	Infringement by Lyft Bikes and Scooters
A computer program product comprising one or more computer-readable storage devices and program instructions stored on at least one of the one or more tangible storage devices, the program instructions comprising: receiving information from each of a plurality of mobile objects within a geographic space; performing a process associated with each mobile object; and registering a first additional process that is to be performed in addition to a first basic process common to the plurality of mobile objects, in association with one mobile object among the plurality of mobile objects, wherein the mobile object is operable to perform, as the first additional process, a process of providing notification that the one mobile object has become distanced from a predetermined location or region.	See claim 11.

’004, ’464, and ’616 Reference Materials

[1] Lyft Inc. Form S-1 for 2019, available at https://www.sec.gov/Archives/edgar/data/1759509/000119312519059849/d633517ds1.htm

[2] Lyft Terms of Service, available at https://www.lyft.com/terms

[3] Motivate Website – “Where We Do It,” available at https://www.motivateco.com/where-we-do-it/

[4] Lyft Rider app screenshots, taken February 1, 2021.

[5] Lyft Scooters Page, available at https://www.lyft.com/scooters

[6] Lyft Bikes Page, available at https://www.lyft.com/bikes

[7] Divvy Ebike pricing and designated service area map, available at https://www.divvybikes.com/pricing/ebikes

[8] “What is Lyft Scooter?” article explaining use of Lyft scooters, available at https://www.ridesharingdriver.com/what-is-lyft-scooter-is-it-better-than-bird-lime/#:~:text=Lyft%20only%20allows%20scooters%20to,to%20drop%20off%20the%20scooter

[9] Lyft Rideable Rental, Waiver of Liability and Release Addendum, available at https://s3.amazonaws.com/api.lyft.com/static/terms-scooter-bike.html

[10] “Meet the Divvy ebike” article, available at https://www.divvybikes.com/how-it-works/ebike

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[12] Lyft help page, available at https://help.lyft.com/hc/en-us/articles/115012927687-How-to-stop-receiving-text-messages#pref

[13] “They’re back! Scooters hit the streets again in Chicago” article, available at https://chi.streetsblog.org/2020/08/13/theyre-back-scooters-hit-the-streets-again-in-chicago/